



## SEQUENCE LISTING

<110> Purdue Research Foundation  
Chapple, Clint  
Nair, Ramesh

<120> REF1 Modified Plants and Plant Seeds

<130> PRF-10329

<160> 47

<170> PatentIn version 3.3

<210> 1

<211> 1625

<212> DNA

<213> Arabidopsis thaliana

<400> 1

```
ccacgcgtcc gagagagaga gagagaatta caaagaaaaa taaatggaga acggcaaattg      60
caacggagcc acgacgggtga agttaccgga gatcaaattc accaagcttt tcatcaacgg      120
ccagttcatt gatgctgctt caggaagac gtttgagacg atagacccta ggaacgggtga      180
agtgatcgca acaatagccg aaggagacaa agaagacgtt gacttggccg ttaacgctgc      240
acgttacgcc ttcgaccatg gtccttggcc tcgcatgacc ggcttcgaga gggcaaagct      300
tataaacaaa ttgcgagact taatagagga aaacattgaa gaattggcta aacttgatgc      360
ggttgacggg ggaaaattgt tccaattggg gaaatatgct gatattccgg ccacagccgg      420
tcattttcga tacaatgcgg gtgcagcggg taaaatccac ggcgagactc ttaaaatgac      480
gcgtcaatcg ttgtttggat acaccctcaa agaaccaatt ggagtgggtg gtaatatcat      540
cccttggaat ttcccaagca ttatgtttgc cacaaggtg gctccggcta tggctgctgg      600
ttgcaccatg gtggtcaagc cagctgaaca gacttcactc tctgctttgt tctatgccc      660
tctctcaaaa gaagcgggaa ttctgatgg tgtgctcaac attgtaactg gttttggatc      720
aactgctgga gctgccattg cctcccatat ggacgtagac aaagttagtt tcaactgggtc      780
aacagatgtt ggaaggaaga taatgcaagc cgcagccgca agtaatctca aaaaagtttc      840
ccttgaatta ggcgggaaat cgccacttct catattcaac gacgctgata ttgacaaagc      900
cgccgatctt gcgcttctcg gttgctttta caacaagggt gaaatttgcg tggcgagctc      960
tcgtgtgttt gttcaagaag gtatatacga taagggtgtg gagaagttag tagagaaggc     1020
taaagattgg accgttggtg atccttttga ttccactgct cgacaaggac ctcaagtgga     1080
taaaagacag tttgagaaga ttctatctta cattgagcac ggtaaaaacg aaggagcgac     1140
```

cttattaact ggaggaaaag ccattggaga caaaggatat ttcattccaac caactatatatt	1200
cgcagatgtc actgaggata tgaagatata ccaagatgaa atctttggac cagtcatgtc	1260
actgatgaaa ttcaagacgg tagaggaagg gatcaaatgc gcaaacaaca cgaaatacgg	1320
tcttgcagca ggaatactaa gccaagacat agacttgatc aacacgggtt cgagggtcaat	1380
caaagctgga atcatttggg ttaattgcta ctctgggtt gatcttgact gtccttatgg	1440
tggctacaag atgagtggta attgtcgtga aagtggcatg gacgctctcg acaactatct	1500
acaaacaaaa tccgtcgta tgctcttca caattccctc tggatgtaat aaaattgtcc	1560
ataacacata gaaaaaaact taatccaatg ataataaggc ggcttgaatt aaaaaaaaaa	1620
aaaaa	1625

<210> 2  
 <211> 1506  
 <212> DNA  
 <213> Arabidopsis thaliana

<400> 2	
atggagaacg gcaaatgcaa cggagccacg acggtgaagt taccggagat caaattcacc	60
aagcttttca tcaacggcca gttcattgat gctgcttcag ggaagacggt tgagacgata	120
gaccctagga acggtgaagt gatcgcaaca atagccgaag gagacaaaga agacgttgac	180
ttggccgtta acgctgcacg ttacgccttc gaccatggtc cttggcctcg catgaccggc	240
ttcgagaggg caaagcttat aaacaaattc gcgacttaa tagaggaaaa cattgaagaa	300
ttggctaaac ttgatgcggt tgacggtgga aaattgttcc aattggggaa atatgctgat	360
attccggcca cagccggtca ttttcgatac aatgcgggtg cagcggataa aatccacggc	420
gagactctta aaatgacgcg tcaatcggtt tttggataca ccctcaaaga accaattgga	480
gtggttggtta atatcatccc ttggaatttc ccaagcatta tgtttgccac aaaggtagct	540
ccggctatgg ctgctgggtt caccatgggt gtcaagccag ctgaacagac ttcactctct	600
gctttgttct atgcccattc ctcaaaagaa gcgggaattc ctgatggtgt gctcaacatt	660
gtaactgggt ttggatcaac tgctggagct gccattgcct cccatatgga cgtagacaaa	720
gttagtttca ctgggtcaac agatgttgga aggaagataa tgcaagccgc agccgcaagt	780
aatctcaaaa aagtttccct tgaattaggc gggaaatcgc cacttctcat attcaacgac	840
gctgatattg acaaagccgc cgatcttgcg cttctcggtt gcttttacia caagggtgaa	900
atgtgcgtgg cgagctctcg tgtgtttgtt caagaaggta tatacgataa ggttgtggag	960
aagttagtag agaaggctaa agattggacc gttggtgatc cttttgattc cactgctcga	1020

caaggacctc aagtggataa aagacagttt gagaagattc tatcttacat tgagcacggt 1080  
 aaaaacgaag gagcgacctt attaactgga ggaaaagcca ttggagacaa aggatatttc 1140  
 atccaaccaa ctatatcgc agatgtcact gaggatatga agatatacca agatgaaatc 1200  
 tttggaccag tcatgtcact gatgaaattc aagacggtag aggaagggat caaatgcgca 1260  
 aacaacacga aatacgggtct tgcagcagga atactaagcc aagacataga cttgatcaac 1320  
 acggtttcga ggtcaatcaa agctggaatc atttgggtta attgctactt cgggtttgat 1380  
 cttgactgtc cttatggtgg ctacaagatg agtggttaatt gtcgtgaaag tggcatggac 1440  
 gctctcgaca actatctaca aaccaaattc gtcgttatgc ctcttcacaa ttccccttgg 1500  
 atgtaa 1506

<210> 3  
 <211> 501  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 3

Met Glu Asn Gly Lys Cys Asn Gly Ala Thr Thr Val Lys Leu Pro Glu  
 1 5 10 15

Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Gln Phe Ile Asp Ala Ala  
 20 25 30

Ser Gly Lys Thr Phe Glu Thr Ile Asp Pro Arg Asn Gly Glu Val Ile  
 35 40 45

Ala Thr Ile Ala Glu Gly Asp Lys Glu Asp Val Asp Leu Ala Val Asn  
 50 55 60

Ala Ala Arg Tyr Ala Phe Asp His Gly Pro Trp Pro Arg Met Thr Gly  
 65 70 75 80

Phe Glu Arg Ala Lys Leu Ile Asn Lys Phe Ala Asp Leu Ile Glu Glu  
 85 90 95

Asn Ile Glu Glu Leu Ala Lys Leu Asp Ala Val Asp Gly Gly Lys Leu  
 100 105 110

Phe Gln Leu Gly Lys Tyr Ala Asp Ile Pro Ala Thr Ala Gly His Phe  
 115 120 125

Arg Tyr Asn Ala Gly Ala Ala Asp Lys Ile His Gly Glu Thr Leu Lys  
 130 135 140

Met Thr Arg Gln Ser Leu Phe Gly Tyr Thr Leu Lys Glu Pro Ile Gly  
 145 150 155 160

Val Val Gly Asn Ile Ile Pro Trp Asn Phe Pro Ser Ile Met Phe Ala  
 165 170 175

Thr Lys Val Ala Pro Ala Met Ala Ala Gly Cys Thr Met Val Val Lys  
 180 185 190

Pro Ala Glu Gln Thr Ser Leu Ser Ala Leu Phe Tyr Ala His Leu Ser  
 195 200 205

Lys Glu Ala Gly Ile Pro Asp Gly Val Leu Asn Ile Val Thr Gly Phe  
 210 215 220

Gly Ser Thr Ala Gly Ala Ala Ile Ala Ser His Met Asp Val Asp Lys  
 225 230 235 240

Val Ser Phe Thr Gly Ser Thr Asp Val Gly Arg Lys Ile Met Gln Ala  
 245 250 255

Ala Ala Ala Ser Asn Leu Lys Lys Val Ser Leu Glu Leu Gly Gly Lys  
 260 265 270

Ser Pro Leu Leu Ile Phe Asn Asp Ala Asp Ile Asp Lys Ala Ala Asp  
 275 280 285

Leu Ala Leu Leu Gly Cys Phe Tyr Asn Lys Gly Glu Ile Cys Val Ala  
 290 295 300

Ser Ser Arg Val Phe Val Gln Glu Gly Ile Tyr Asp Lys Val Val Glu  
 305 310 315 320

Lys Leu Val Glu Lys Ala Lys Asp Trp Thr Val Gly Asp Pro Phe Asp  
 325 330 335

Ser Thr Ala Arg Gln Gly Pro Gln Val Asp Lys Arg Gln Phe Glu Lys  
 340 345 350

Ile Leu Ser Tyr Ile Glu His Gly Lys Asn Glu Gly Ala Thr Leu Leu  
 355 360 365

Thr Gly Gly Lys Ala Ile Gly Asp Lys Gly Tyr Phe Ile Gln Pro Thr  
 370 375 380

Ile Phe Ala Asp Val Thr Glu Asp Met Lys Ile Tyr Gln Asp Glu Ile  
 385 390 395 400

Phe Gly Pro Val Met Ser Leu Met Lys Phe Lys Thr Val Glu Glu Gly  
 405 410 415

Ile Lys Cys Ala Asn Asn Thr Lys Tyr Gly Leu Ala Ala Gly Ile Leu  
 420 425 430

Ser Gln Asp Ile Asp Leu Ile Asn Thr Val Ser Arg Ser Ile Lys Ala  
 435 440 445

Gly Ile Ile Trp Val Asn Cys Tyr Phe Gly Phe Asp Leu Asp Cys Pro  
 450 455 460

Tyr Gly Gly Tyr Lys Met Ser Gly Asn Cys Arg Glu Ser Gly Met Asp  
 465 470 475 480

Ala Leu Asp Asn Tyr Leu Gln Thr Lys Ser Val Val Met Pro Leu His  
 485 490 495

Asn Ser Pro Trp Met  
 500

<210> 4  
 <211> 1636  
 <212> DNA  
 <213> *Arabidopsis thaliana*

<400> 4  
 atggcatcaa gaagagtttc ttcgctgctc tctcgctctt tcatgtcctc ctcaagttct 60  
 atctttctctc ttagaggcat gaacagagga gctcaaagat acagtaacct cgctgctgct 120  
 gtcgaaaaca ctattactcc accagtgaag gttgaacaca cacagcttct aatcggtgga 180  
 agattcggtt atgcagtgtc agggaaaaact ttccctactt tggatccaag aaatggagaa 240  
 gtgattgctc aagtgtctga aggtgatgca gaagacgtga accgcgcggt tgcagctgca 300  
 cgaaaggctt ttgatgaagg accatggcct aaaatgacag cttatgagag atcaaagata 360  
 ctgtttcggt tcgctgattt aatcgagaaa cataatgatg agattgctgc tcttgagact 420  
 tgggataatg ggaaacctta tgaacaatct gctcaaattg aagtaccaat gcttgctagg 480  
 gtgttcgggt actatgctgg ttgggcagac aagatacatg gaatgacaat gccaggagat 540  
 ggtccacacc atgtgcagac cttacatgag cctataggag tcgctggaca aatcatccca 600  
 tggaaacttc ctcttctcat gctttcttgg aaacttggac cagctttagc ttgcggtaac 660  
 accgttggtc tcaaaactgc tgagcaaact cctctatctg ctcttcttgt tgggaaacta 720  
 cttcatgagg ctggacttcc tgatggagtt gtgaatatag tttctggatt tggggctact 780  
 gctggtgcag ctatagctag tcacatggac gttgataagg ttgctttcac cgggtctact 840  
 gatgttggga agattattct tgagtttagct tcaaaaagca accttaaggc agtgactctt 900  
 gagcttggag gaaagtcacc attcattgta tgtgaagatg ctgatgtgga tcaggccggt 960  
 gagcttgcac atttcgcttt gttctttaac cagggacaat gttgttgtgc tggttcgcgt 1020  
 acatttgtac atgaacgtgt gtatgatgag tttgtagaga aagctaaagc tcgtgcactc 1080  
 aagcgaaatg ttggagatcc cttcaagtca ggcattgagc aagggtccca ggtagactca 1140  
 gagcaattca acaaaatcct gaagtacatc aaacatggag ttgaggctgg agccacatta 1200  
 caagctggag gtgacaggct tggttccaag ggttactaca ttcaacctac tgtcttctca 1260  
 gatgtgaaag atgacatgct catagcaaca gacgagattt tcgggcccgt tcaaaccata 1320  
 ctgaaattca aggatcttga tgagggtgatt gcaagggcca acaactcaag gtacgggttta 1380  
 gctgctggag tggtcacaca gaatcttgac acagcacacc ggctgatgag agcactcaga 1440  
 gttgggactg tttggatcaa ctgttttgat gtacttgatg catcaattcc atttggaggg 1500

tataagatga gtggcattgg tagagagaaa ggtatctaca gtctcaacaa ttacttgcaa 1560  
 gtcaaggctg ttgttacttc cctcaagaac cctgcctggc tctaaaccat accaggtggt 1620  
 tacacttatt tctcga 1636

<210> 5  
 <211> 534  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 5

Met Ala Ser Arg Arg Val Ser Ser Leu Leu Ser Arg Ser Phe Met Ser  
 1 5 10 15

Ser Ser Arg Ser Ile Phe Ser Leu Arg Gly Met Asn Arg Gly Ala Gln  
 20 25 30

Arg Tyr Ser Asn Leu Ala Ala Ala Val Glu Asn Thr Ile Thr Pro Pro  
 35 40 45

Val Lys Val Glu His Thr Gln Leu Leu Ile Gly Gly Arg Phe Val Asp  
 50 55 60

Ala Val Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro Arg Asn Gly Glu  
 65 70 75 80

Val Ile Ala Gln Val Ser Glu Gly Asp Ala Glu Asp Val Asn Arg Ala  
 85 90 95

Val Ala Ala Ala Arg Lys Ala Phe Asp Glu Gly Pro Trp Pro Lys Met  
 100 105 110

Thr Ala Tyr Glu Arg Ser Lys Ile Leu Phe Arg Phe Ala Asp Leu Ile  
 115 120 125

Glu Lys His Asn Asp Glu Ile Ala Ala Leu Glu Thr Trp Asp Asn Gly  
 130 135 140

Lys Pro Tyr Glu Gln Ser Ala Gln Ile Glu Val Pro Met Leu Ala Arg  
 145 150 155 160

Val Phe Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Ile His Gly Met Thr  
 165 170 175

Met Pro Gly Asp Gly Pro His His Val Gln Thr Leu His Glu Pro Ile  
 180 185 190

Gly Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Leu  
 195 200 205

Ser Trp Lys Leu Gly Pro Ala Leu Ala Cys Gly Asn Thr Val Val Leu  
 210 215 220

Lys Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Leu Val Gly Lys Leu  
 225 230 235 240

Leu His Glu Ala Gly Leu Pro Asp Gly Val Val Asn Ile Val Ser Gly  
 245 250 255

Phe Gly Ala Thr Ala Gly Ala Ala Ile Ala Ser His Met Asp Val Asp  
 260 265 270

Lys Val Ala Phe Thr Gly Ser Thr Asp Val Gly Lys Ile Ile Leu Glu  
 275 280 285

Leu Ala Ser Lys Ser Asn Leu Lys Ala Val Thr Leu Glu Leu Gly Gly  
 290 295 300

Lys Ser Pro Phe Ile Val Cys Glu Asp Ala Asp Val Asp Gln Ala Val  
 305 310 315 320

Glu Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys  
 325 330 335

Ala Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp Glu Phe Val  
 340 345 350

Glu Lys Ala Lys Ala Arg Ala Leu Lys Arg Asn Val Gly Asp Pro Phe  
 355 360 365

Lys Ser Gly Ile Glu Gln Gly Pro Gln Val Asp Ser Glu Gln Phe Asn  
 370 375 380

Lys Ile Leu Lys Tyr Ile Lys His Gly Val Glu Ala Gly Ala Thr Leu  
 385 390 395 400

Gln Ala Gly Gly Asp Arg Leu Gly Ser Lys Gly Tyr Tyr Ile Gln Pro  
 405 410 415



Thr Val Phe Ser Asp Val Lys Asp Asp Met Leu Ile Ala Thr Asp Glu  
 420 425 430

Ile Phe Gly Pro Val Gln Thr Ile Leu Lys Phe Lys Asp Leu Asp Glu  
 435 440 445

Val Ile Ala Arg Ala Asn Asn Ser Arg Tyr Gly Leu Ala Ala Gly Val  
 450 455 460

Phe Thr Gln Asn Leu Asp Thr Ala His Arg Leu Met Arg Ala Leu Arg  
 465 470 475 480

Val Gly Thr Val Trp Ile Asn Cys Phe Asp Val Leu Asp Ala Ser Ile  
 485 490 495

Pro Phe Gly Gly Tyr Lys Met Ser Gly Ile Gly Arg Glu Lys Gly Ile  
 500 505 510

Tyr Ser Leu Asn Asn Tyr Leu Gln Val Lys Ala Val Val Thr Ser Leu  
 515 520 525

Lys Asn Pro Ala Trp Leu  
 530

<210> 6  
 <211> 1854  
 <212> DNA  
 <213> Arabidopsis thaliana

<400> 6  
 agaggaggag aattcgaaga ataaaagata agaactttga cgttttgaag cttaaagctt 60  
 gaaacttggt tcatccatgg cggctcgtag agtgtcttct cttttatctc gatctttttc 120  
 agcttctctt cccttactgt ttcgtttctca agggagaaat tgttacaatg gagggatctt 180  
 aaggagattt ggaacctctt ctgctgctgc tgaggaaatc ataaacccat ctgttcaagt 240  
 ttctcacaca cagctcctca tcaatgggaa ctttggtgac tctgcttctg gtaagacggt 300  
 tccgactctt gatccgagga caggcgaagt cattgctcat gtagctgaag gcgatgctga 360  
 agatatcaat cgagctgtga aagctgcaag gacggccttt gatgaaggac cttggcctaa 420  
 aatgagtgtt tatgaaaggt caagagtttt gttgaggttt gcagatttgg ttgagaaaca 480  
 cagcgaagag ctgcgctctc tagagacatg ggacaatggc aagccttacc aacaatcctt 540  
 gaccgcagag attcccatgt ttgcaagatt gttccgttac tatgctggat gggcggataa 600

gattcatgga ctaacaattc cagctgatgg aaactatcaa gttcacacat tacatgaacc 660  
gataggtgta gctggacaga tcataccgtg gaattttcca cttttgatgt ttgcttgga 720  
agttggctct gctcttgctt gtggtaacac cattgtcctc aaaaccgctg agcaaacc 780  
tctcacggct ttctatgctg gaaagctttt ccttgaagcg ggtcttctc ctggtgttct 840  
gaatattggt tcgggattcg gtgcaacagc aggtgctgcc ctgcgagtc atatggatgt 900  
agacaagctt gcttttacag gatcgactga tacggggaaa gttatacttg gattggctgc 960  
taacagcaat ctttaagccc taactctgga acttggaggg aaatcaccgt tcatcgtatt 1020  
cgaagatgct gatattgata aagctgtaga gcttgcacac tttgccctct tcttcaacca 1080  
ggggcaatgt tgctgcgcgg ggtctcgac atttgttcat gagaaagtgt atgatgagtt 1140  
tgttgagaaa tcaaaggcac gcgcattgaa acgtgttggt ggtgatcctt tcaggaaagg 1200  
cattgaacag ggtcctcaga tcgatttgaa gcaatttgag aaagtgatga agtacataaa 1260  
gtcaggtatc gaaagcaatg ctactcttga atgtggtggt gatcagattg gagacaaagg 1320  
ttacttcac caacctactg tcttctctaa tgtaaggat gacatgctta tcgctcaaga 1380  
cgagattttc ggtccagtc aatcgatctt gaagttcagt gatgtggatg aggtgataaa 1440  
gagggcgaac gagacgaagt acgggctagc ggcaggggtt ttcacgaaga atctggacac 1500  
ggcaaacagg gtttcaaggg ctttgaaagc tggtaccgta tgggttaact gcttcgacgt 1560  
atgtgatgca gccataccat ttggtgggta caagatgagt gggaatggga gagagaaagg 1620  
catatacagt ctcaataatt acttgcagat caaggcagtc gtcactgctc taaataagcc 1680  
tgcttgatc tgatctctgg agtggtggtt cagcatcata aatgctcaaa caaaagaaat 1740  
agactctata aagttacaat agtaataatt aaggatcatg tttgtaattt gagtaacgga 1800  
ttgtgatact tctaataaat ttttcattgt tgtttattca aaaaaaaaaa aaaa 1854

<210> 7  
<211> 538  
<212> PRT  
<213> Arabidopsis thaliana

<400> 7

Met Ala Ala Arg Arg Val Ser Ser Leu Leu Ser Arg Ser Phe Ser Ala  
1 5 10 15

Ser Ser Pro Leu Leu Phe Arg Ser Gln Gly Arg Asn Cys Tyr Asn Gly  
20 25 30

Gly Ile Leu Arg Arg Phe Gly Thr Ser Ser Ala Ala Ala Glu Glu Ile  
 35 40 45  
 Ile Asn Pro Ser Val Gln Val Ser His Thr Gln Leu Leu Ile Asn Gly  
 50 55 60  
 Asn Phe Val Asp Ser Ala Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro  
 65 70 75 80  
 Arg Thr Gly Glu Val Ile Ala His Val Ala Glu Gly Asp Ala Glu Asp  
 85 90 95  
 Ile Asn Arg Ala Val Lys Ala Ala Arg Thr Ala Phe Asp Glu Gly Pro  
 100 105 110  
 Trp Pro Lys Met Ser Ala Tyr Glu Arg Ser Arg Val Leu Leu Arg Phe  
 115 120 125  
 Ala Asp Leu Val Glu Lys His Ser Glu Glu Leu Ala Ser Leu Glu Thr  
 130 135 140  
 Trp Asp Asn Gly Lys Pro Tyr Gln Gln Ser Leu Thr Ala Glu Ile Pro  
 145 150 155 160  
 Met Phe Ala Arg Leu Phe Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Ile  
 165 170 175  
 His Gly Leu Thr Ile Pro Ala Asp Gly Asn Tyr Gln Val His Thr Leu  
 180 185 190  
 His Glu Pro Ile Gly Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro  
 195 200 205  
 Leu Leu Met Phe Ala Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn  
 210 215 220  
 Thr Ile Val Leu Lys Thr Ala Glu Gln Thr Pro Leu Thr Ala Phe Tyr  
 225 230 235 240  
 Ala Gly Lys Leu Phe Leu Glu Ala Gly Leu Pro Pro Gly Val Leu Asn  
 245 250 255  
 Ile Val Ser Gly Phe Gly Ala Thr Ala Gly Ala Ala Leu Ala Ser His  
 260 265 270

Met Asp Val Asp Lys Leu Ala Phe Thr Gly Ser Thr Asp Thr Gly Lys  
 275 280 285  
 Val Ile Leu Gly Leu Ala Ala Asn Ser Asn Leu Lys Pro Val Thr Leu  
 290 295 300  
 Glu Leu Gly Gly Lys Ser Pro Phe Ile Val Phe Glu Asp Ala Asp Ile  
 305 310 315 320  
 Asp Lys Ala Val Glu Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly  
 325 330 335  
 Gln Cys Cys Cys Ala Gly Ser Arg Thr Phe Val His Glu Lys Val Tyr  
 340 345 350  
 Asp Glu Phe Val Glu Lys Ser Lys Ala Arg Ala Leu Lys Arg Val Val  
 355 360 365  
 Gly Asp Pro Phe Arg Lys Gly Ile Glu Gln Gly Pro Gln Ile Asp Leu  
 370 375 380  
 Lys Gln Phe Glu Lys Val Met Lys Tyr Ile Lys Ser Gly Ile Glu Ser  
 385 390 395 400  
 Asn Ala Thr Leu Glu Cys Gly Gly Asp Gln Ile Gly Asp Lys Gly Tyr  
 405 410 415  
 Phe Ile Gln Pro Thr Val Phe Ser Asn Val Lys Asp Asp Met Leu Ile  
 420 425 430  
 Ala Gln Asp Glu Ile Phe Gly Pro Val Gln Ser Ile Leu Lys Phe Ser  
 435 440 445  
 Asp Val Asp Glu Val Ile Lys Arg Ala Asn Glu Thr Lys Tyr Gly Leu  
 450 455 460  
 Ala Ala Gly Val Phe Thr Lys Asn Leu Asp Thr Ala Asn Arg Val Ser  
 465 470 475 480  
 Arg Ala Leu Lys Ala Gly Thr Val Trp Val Asn Cys Phe Asp Val Phe  
 485 490 495

Asp Ala Ala Ile Pro Phe Gly Gly Tyr Lys Met Ser Gly Asn Gly Arg  
500 505 510

Glu Lys Gly Ile Tyr Ser Leu Asn Asn Tyr Leu Gln Ile Lys Ala Val  
515 520 525

Val Thr Ala Leu Asn Lys Pro Ala Trp Ile  
530 535

<210> 8  
<211> 1751  
<212> DNA  
<213> Oryza sativa

<400> 8  
aacttccaat ttctctctcc acatctctct gtgtttcttt tatttctcct ctgctcgcg 60  
cgatggcggc ggcgaacggc ggcgacagca aggggttcga ggtgccgaag ctggagatca 120  
agttcaccaa gctcttcata aatggccgct tcgtcgacgc cgtctccggc aagacattcg 180  
aaacccgtga cccgcgcacc ggcgaggtca tcgccaagat cgccgaagga gacaaggccg 240  
acatcgacct cgccgtgaag gccgccaggg aggccttcga ccatggcccc tggccaagaa 300  
tgtccggctt tgcgagggga aggatcctgc acaagtctgc ggacctggtg gagcagcacg 360  
tggaggagct ggcggcgctg gacacgggtg acgccggcaa gctgttcgcg atggggaagc 420  
tcgtcgacat ccccggcggc gcgaacctgc tccggtacta cgccggcgcg gcggacaagg 480  
tgcacggcga gacgctcaag atggcgcggc catgccacgg gtacacgctc aaggagcccc 540  
tcggcgctgt cggccacatc gtgccgtgga actacccac caccatgttc ttcttcaagg 600  
ccagcccggc gctcgccgcc ggctgcacca tggtcgtcaa gcccgccgag cagaccccc 660  
tctccgcgct cttctacgcc cacctcgcca agcttgccgg cgtccccgac ggcgtgctca 720  
acgtcgctcc cggcttcggc cccaccgccc gcgccgctat ctctccccc atggacattg 780  
acaaggtgag ctccaccggc tcgacggagg tcggccggct ggtgatggag gcggcggcga 840  
agagcaacct gaagcccgtc tcgctcgagc tgggtggcaa gtctccggtc atcgtgttcg 900  
acgacgccga cctcgacacg gccgtgaacc tggccacat ggccctctac accaacaagg 960  
gtgagatctg cgtcgccggc tcgcaatct atgtccagga ggggatctac gatgcgttcg 1020  
tgaagaaggc gaccgagatg gccaaagaaat cggtggtcgg agatccgttc aaccgcgag 1080  
ttcatcaagg cctcagatt gacaaggagc aatacgagaa gatcctcaag tacatcgaca 1140  
tcggtaagcg cgaaggcgcg acgttggtca ccggagggaa gccctgcggc gaaaacgggt 1200

actacatcga gccaccatc ttcacggacg tcaaggaaga aatgtcgatc gcgcaagagg 1260  
aaatcttcgg gccggtgatg gccctcatga aattcaagac ggttgaggag gcgatccaga 1320  
aggcgaacag caccocgtac ggcttggtg ccggcatagt caccaagaac atcgacgtcg 1380  
cgaacacggg ttcgcggtcg atccgggcag gggcaatctg gatcaattgc tacctcggct 1440  
tcgaccccgga cgtgccgttc ggggggtaca agatgagcgg cttcggcaag gacatgggca 1500  
tggaacgcct tgagaagtac ctccacacca aggcgggtggc caccctctc tacaacaccc 1560  
cttggttatg atctgatgat gaacagcaca gaaagattaa ttacagtgga aaaaaataac 1620  
atctctatat atacagctga aagggtgggt tatatttgtg gttagttgat tgcttgatc 1680  
aaatatcaat ttgtcggat aaagacagta tatttcagtt aaaaaaaaaa aaaaaaaaaa 1740  
aaaaaaaaa a 1751

<210> 9  
<211> 502  
<212> PRT  
<213> Oryza sativa

<400> 9

Met Ala Ala Ala Asn Gly Gly Asp Ser Lys Gly Phe Glu Val Pro Lys  
1 5 10 15

Leu Glu Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Arg Phe Val Asp  
20 25 30

Ala Val Ser Gly Lys Thr Phe Glu Thr Arg Asp Pro Arg Thr Gly Glu  
35 40 45

Val Ile Ala Lys Ile Ala Glu Gly Asp Lys Ala Asp Ile Asp Leu Ala  
50 55 60

Val Lys Ala Ala Arg Glu Ala Phe Asp His Gly Pro Trp Pro Arg Met  
65 70 75 80

Ser Gly Phe Ala Arg Gly Arg Ile Leu His Lys Phe Ala Asp Leu Val  
85 90 95

Glu Gln His Val Glu Glu Leu Ala Ala Leu Asp Thr Val Asp Ala Gly  
100 105 110

Lys Leu Phe Ala Met Gly Lys Leu Val Asp Ile Pro Gly Gly Ala Asn  
115 120 125

Leu Leu Arg Tyr Tyr Ala Gly Ala Ala Asp Lys Val His Gly Glu Thr  
 130 135 140  
 Leu Lys Met Ala Arg Pro Cys His Gly Tyr Thr Leu Lys Glu Pro Val  
 145 150 155 160  
 Gly Val Val Gly His Ile Val Pro Trp Asn Tyr Pro Thr Thr Met Phe  
 165 170 175  
 Phe Phe Lys Ala Ser Pro Ala Leu Ala Ala Gly Cys Thr Met Val Val  
 180 185 190  
 Lys Pro Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Tyr Ala His Leu  
 195 200 205  
 Ala Lys Leu Ala Gly Val Pro Asp Gly Val Leu Asn Val Val Pro Gly  
 210 215 220  
 Phe Gly Pro Thr Ala Gly Ala Ala Ile Ser Ser His Met Asp Ile Asp  
 225 230 235 240  
 Lys Val Ser Phe Thr Gly Ser Thr Glu Val Gly Arg Leu Val Met Glu  
 245 250 255  
 Ala Ala Ala Lys Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly Gly  
 260 265 270  
 Lys Ser Pro Val Ile Val Phe Asp Asp Ala Asp Leu Asp Thr Ala Val  
 275 280 285  
 Asn Leu Val His Met Ala Ser Tyr Thr Asn Lys Gly Glu Ile Cys Val  
 290 295 300  
 Ala Gly Ser Arg Ile Tyr Val Gln Glu Gly Ile Tyr Asp Ala Phe Val  
 305 310 315 320  
 Lys Lys Ala Thr Glu Met Ala Lys Lys Ser Val Val Gly Asp Pro Phe  
 325 330 335

Asn Pro Arg Val His Gln Gly Pro Gln Ile Asp Lys Glu Gln Tyr Glu  
 340 345 350

Lys Ile Leu Lys Tyr Ile Asp Ile Gly Lys Arg Glu Gly Ala Thr Leu  
 355 360 365

Val Thr Gly Gly Lys Pro Cys Gly Glu Asn Gly Tyr Tyr Ile Glu Pro  
 370 375 380

Thr Ile Phe Thr Asp Val Lys Glu Glu Met Ser Ile Ala Gln Glu Glu  
 385 390 395 400

Ile Phe Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Val Glu Glu  
 405 410 415

Ala Ile Gln Lys Ala Asn Ser Thr Arg Tyr Gly Leu Ala Ala Gly Ile  
 420 425 430

Val Thr Lys Asn Ile Asp Val Ala Asn Thr Val Ser Arg Ser Ile Arg  
 435 440 445

Ala Gly Ala Ile Trp Ile Asn Cys Tyr Leu Gly Phe Asp Pro Asp Val  
 450 455 460

Pro Phe Gly Gly Tyr Lys Met Ser Gly Phe Gly Lys Asp Met Gly Met  
 465 470 475 480

Asp Ala Leu Glu Lys Tyr Leu His Thr Lys Ala Val Val Thr Pro Leu  
 485 490 495

Tyr Asn Thr Pro Trp Leu  
 500

<210> 10

<211> 1855

<212> DNA

<213> Oryza sativa

<400> 10

tgcagcttat catggcggca aggagggctg cttcctccct cctctctcgc ggccctcatcg 60

cgaggccttc tgctgcctcc tccactggcg actccgctat ccttggagca ggctcagcac 120

ggggcttctt gcttgatca cttcacagat tcagcgctgc accggccgcc gctgccaccg 180

ccgcagccac tgaggagccg atccagccgc cggtaggacgt gaagtacacc aagctcctca 240



tcaatggcaa cttcgtcgat gcagcatctg ggaagacgtt cgcgacggtg gatccccgca	300
ccggcgatgt cattgcccgc gtggccgagg gcgacgcgga ggacgtcaac cgcgccgtcg	360
ccgccgcccgc ccgggccttc gacgagggcc cgtggccgcg gatgaccgcc tacgagcggg	420
gcaggggtgt gctgcgggtc gcggacctga tcgagcagca cgccgatgag atcgcggcgc	480
tggagacgtg ggacggcggg aagacgctgg agcagacgac ggggacggag gtgccgatgg	540
tggcgcggtg catgcgggtac tacggcgggg gggcggaaca gatccacggc ctcgctcgtc	600
cggcggatgg gccacaccac gtgcagggtc tacacgagcc catcggcgtg gccgggcaga	660
tcatccccctg gaacttcccc ctgctcatgt tcgcctggaa ggtcggcccc gcgctcgct	720
gcggcaacgc cgtcgtgctc aagaccgccg agcagacgcc gctctccgcg ctcttcgctc	780
ccagcctgct ccacgaggct ggcctccccg acggcggttct caacgtcgtc tccggctttg	840
gtccgaccgc cggcgccgct ctctccagcc acatgggtgt cgacaagctt gcattcaccg	900
gttcgacggg cacgggcaag atcgtgcttg agctggccgc aaggagcaac cttaagccgg	960
tgacgtgga gctcggaggc aaatcacctt tcatcgatcat ggatgacgcc gatgtcgacc	1020
aggccgtcga gcttgcgcac cgcgcgctct tcttcaacca ggggcaatgc tgctgcgcgg	1080
ggtcacgcac gttcgtgcac gagcgcgtct acgacgagtt cgtggagaag gccagggctc	1140
gcgctctgca gcgtgtggtc ggcgacccat tcaggacagg cgtcgagcag gggcctcaga	1200
tcgacggcga gcaattcaag aagatcttgc agtacgtcaa gtcgggcgtg gacagtggcg	1260
ccacactcgt ggccggcggc gacagggcgg gcagcagggg gttctacatc cagccaaccg	1320
tctttgcaga cgtcgaggac gaaatgaaga tcgcgcagga ggagatattc gggccggtgc	1380
agtccatcct caagttcagc acggtggagg aggtggtgcg gagggcgaaac gcgacgccat	1440
acgggctggc ggcgggggtg ttcacccaga ggctggacgc ggcgaacacc ctggcgcggg	1500
cattgagggg cgggacggtg tgggtgaaca cctacgacgt gttcgacgcg gccgtcccgt	1560
tcggcggtca caagatgagc ggcgttgga gggagaaggg cgtctacagc ctccgcaact	1620
acctccagac caaggccgtc gtcacgccc tcaaggacgc cgctgggttg tagctgtagt	1680
aatcgatcct ttctctctc catccccatc gccattgctg cgtgctatga ctgctatccc	1740
gtgctcttcc atatcagttg tcaactgtca gcgtgatgtc tctgaacaac gccagagatt	1800
gcgatgaata atgggttaaat cgggcaatct tttgtacaaa aaaaaaaaaa aaaaa	1855

<210> 11  
 <211> 553  
 <212> PRT  
 <213> Oryza sativa

<400> 11

Met Ala Ala Arg Arg Ala Ala Ser Ser Leu Leu Ser Arg Gly Leu Ile  
 1 5 10 15

Ala Arg Pro Ser Ala Ala Ser Ser Thr Gly Asp Ser Ala Ile Leu Gly  
 20 25 30

Ala Gly Ser Ala Arg Gly Phe Leu Pro Gly Ser Leu His Arg Phe Ser  
 35 40 45

Ala Ala Pro Ala Ala Ala Ala Thr Ala Ala Ala Thr Glu Glu Pro Ile  
 50 55 60

Gln Pro Pro Val Asp Val Lys Tyr Thr Lys Leu Leu Ile Asn Gly Asn  
 65 70 75 80

Phe Val Asp Ala Ala Ser Gly Lys Thr Phe Ala Thr Val Asp Pro Arg  
 85 90 95

Thr Gly Asp Val Ile Ala Arg Val Ala Glu Gly Asp Ala Glu Asp Val  
 100 105 110

Asn Arg Ala Val Ala Ala Ala Arg Arg Ala Phe Asp Glu Gly Pro Trp  
 115 120 125

Pro Arg Met Thr Ala Tyr Glu Arg Cys Arg Val Leu Leu Arg Phe Ala  
 130 135 140

Asp Leu Ile Glu Gln His Ala Asp Glu Ile Ala Ala Leu Glu Thr Trp  
 145 150 155 160

Asp Gly Gly Lys Thr Leu Glu Gln Thr Thr Gly Thr Glu Val Pro Met  
 165 170 175

Val Ala Arg Tyr Met Arg Tyr Tyr Gly Gly Trp Ala Asp Lys Ile His  
 180 185 190

Gly Leu Val Val Pro Ala Asp Gly Pro His His Val Gln Val Leu His  
 195 200 205

Glu Pro Ile Gly Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu  
 210 215 220

Leu Met Phe Ala Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn Ala  
 225 230 235 240

Val Val Leu Lys Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Val  
 245 250 255

Ala Ser Leu Leu His Glu Ala Gly Leu Pro Asp Gly Val Leu Asn Val  
 260 265 270

Val Ser Gly Phe Gly Pro Thr Ala Gly Ala Ala Leu Ser Ser His Met  
 275 280 285

Gly Val Asp Lys Leu Ala Phe Thr Gly Ser Thr Gly Thr Gly Lys Ile  
 290 295 300

Val Leu Glu Leu Ala Ala Arg Ser Asn Leu Lys Pro Val Thr Leu Glu  
 305 310 315 320

Leu Gly Gly Lys Ser Pro Phe Ile Val Met Asp Asp Ala Asp Val Asp  
 325 330 335

Gln Ala Val Glu Leu Ala His Arg Ala Leu Phe Phe Asn Gln Gly Gln  
 340 345 350

Cys Cys Cys Ala Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp  
 355 360 365

Glu Phe Val Glu Lys Ala Arg Ala Arg Ala Leu Gln Arg Val Val Gly  
 370 375 380

Asp Pro Phe Arg Thr Gly Val Glu Gln Gly Pro Gln Ile Asp Gly Glu  
 385 390 395 400

Gln Phe Lys Lys Ile Leu Gln Tyr Val Lys Ser Gly Val Asp Ser Gly  
 405 410 415

Ala Thr Leu Val Ala Gly Gly Asp Arg Ala Gly Ser Arg Gly Phe Tyr  
 420 425 430

Ile Gln Pro Thr Val Phe Ala Asp Val Glu Asp Glu Met Lys Ile Ala  
 435 440 445

Gln Glu Glu Ile Phe Gly Pro Val Gln Ser Ile Leu Lys Phe Ser Thr  
 450 455 460

Val Glu Glu Val Val Arg Arg Ala Asn Ala Thr Pro Tyr Gly Leu Ala  
 465 470 475 480

Ala Gly Val Phe Thr Gln Arg Leu Asp Ala Ala Asn Thr Leu Ala Arg  
 485 490 495

Ala Leu Arg Val Gly Thr Val Trp Val Asn Thr Tyr Asp Val Phe Asp  
 500 505 510

Ala Ala Val Pro Phe Gly Gly Tyr Lys Met Ser Gly Val Gly Arg Glu  
 515 520 525

Lys Gly Val Tyr Ser Leu Arg Asn Tyr Leu Gln Thr Lys Ala Val Val  
 530 535 540

Thr Pro Ile Lys Asp Ala Ala Trp Leu  
 545 550

<210> 12  
 <211> 2115  
 <212> DNA  
 <213> Oryza sativa

<400> 12  
 caaagcaaag ccgccattac tgctcctctt ccattccact ggggacgtac gagctccgcg 60  
 catcccttcc attccattac tgaccttggc tgctgcggct gcagtgcaga gggggtttgg 120  
 tgggtgcggtt gatttgagca ataaattctc taggggggag ggaggtatcg gtcattggctg 180  
 ccgctgctgc aaggaggggc tcacgctgc tctctcgtg cctgctgtcc aggcccgccg 240  
 ccgccgcctc gcctgctgtc ccctctgcgc tccgcagggc agatgggaca caaggattgt 300  
 tgccgggaat ccttcagagg ttcagcactg cagcagtagc agaggagccc atatcacccc 360  
 cagtccaagt gaactacact cagctcctca ttgatggaaa attcgttgat tcagcatctg 420  
 gcaaaacttt cccaactctg gaccctcgta ccggggagct gattgcccatt gtggctgaag 480

gcgatgcgga ggatattaac cgtgcggttc atgcggcccg caaggctttc gatgaagggc	540
catggccaaa gatgactgcc tatgagagat cccggattct gttgcgggtt gctgacttga	600
ttgagaagca caacgatgaa attgctgcat tggagacatg ggacaacggc aagccgtatg	660
cgcaagctgc caacattgaa gtgccaatgg tggcacggct gatgcggtac tatgctgggt	720
gggctgacaa gatccatggg cttgtcgtgc cggctgacgg cccacaccat gtacaggtgc	780
tgcacgagcc cattgggtgc gcaggtcaga tcatcccatg gaactttccg cttctgatgt	840
ttgcgtggaa agttggccct gctttggctt gtggaaacac tgttgtgctc aagacggctg	900
agcaaaactcc tctgtctgct ctatttgctt ctaagctggt gcatgaggct ggactcccag	960
acggtgttgt taacgtggta tctgggtttg gacctactgc tgggtgctgct cttgctagtc	1020
acatggatgt cgataagatt gcattcactg gatcgaccga tactggaaaa gtcgtccttg	1080
agttggctgc aaggagcaac ctttaagtcag tgacactgga gctaggaggc aagtctcctt	1140
tcatcatcat ggatgatgct gatgttgacc atgctgttga gcttgcgcat tttgcactgt	1200
tctttaacca gggacaatgt tgcgtgtgctg ggtctcgtac atttgtgcat gagcgtatct	1260
atgatgagtt cgtggagaag gccaaaggctc gtgctctcaa gcgtgtgggt ggtgatccat	1320
tcaagaatgg tgttgaacag ggccctcaga ttgatgacga gcaattcaac aagatcttgc	1380
gctacatcaa gtatgggtgtt gacagtggag ccaaccttgt gactgggtggc gacagattag	1440
gtgacaaagg ttactacatc cagccaacaa ttttctcgga tgtacaggat aacatgagga	1500
ttgctcaaga agagatattt ggccctgtgc agtccattct gaagttcaat gatctgaacg	1560
aggtcatcaa gagggcaaat gcaagccagt acgggctggc tgctggggtc ttcaccaaca	1620
acctgaacac ggccaacacc ctgacctcg cgcctcagggt cgggaccgtg tgggtgaact	1680
gcttcgacgt cttcgacgcc gcgatcccgt tcggcggata caagcagagc ggcacggga	1740
gggagaaggg catcgacagc ctgaagaact acctgcaggt caaggccgtc gtcacgccga	1800
tcaagaacgc cgcgtgggtt taaacacata gatgtttgga catttcagaa ctggggaaga	1860
aataggtata atcttatgga cggatgcgaa aatggcgata aattatggcg ataagattat	1920
gatgatgatg atgaagaaga agaagaggag gaggaagaac agctgaaata agcttgtcct	1980
agcatggggc tggcattgtc tctaataaac cttgtgggtt gtgctcatgt tactgatgga	2040
gtatattgta gaagcagatt tatgttcatt atgaaatata tatcgcttgt ttgggataaa	2100
aaaaaaaaa aaaaa	2115

<210> 13  
 <211> 549  
 <212> PRT  
 <213> Oryza sativa

<400> 13

Met Ala Ala Ala Ala Ala Arg Arg Gly Ser Ser Leu Leu Ser Arg Cys  
 1 5 10 15

Leu Leu Ser Arg Pro Ala Ala Ala Ala Ser Pro Ala Val Pro Ser Ala  
 20 25 30

Leu Arg Arg Ala Asp Gly Thr Gln Gly Leu Leu Pro Gly Ile Leu Gln  
 35 40 45

Arg Phe Ser Thr Ala Ala Val Ala Glu Glu Pro Ile Ser Pro Pro Val  
 50 55 60

Gln Val Asn Tyr Thr Gln Leu Leu Ile Asp Gly Lys Phe Val Asp Ser  
 65 70 75 80

Ala Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro Arg Thr Gly Glu Leu  
 85 90 95

Ile Ala His Val Ala Glu Gly Asp Ala Glu Asp Ile Asn Arg Ala Val  
 100 105 110

His Ala Ala Arg Lys Ala Phe Asp Glu Gly Pro Trp Pro Lys Met Thr  
 115 120 125

Ala Tyr Glu Arg Ser Arg Ile Leu Leu Arg Phe Ala Asp Leu Ile Glu  
 130 135 140

Lys His Asn Asp Glu Ile Ala Ala Leu Glu Thr Trp Asp Asn Gly Lys  
 145 150 155 160

Pro Tyr Ala Gln Ala Ala Asn Ile Glu Val Pro Met Val Ala Arg Leu  
 165 170 175

Met Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Ile His Gly Leu Val Val  
 180 185 190

Pro Ala Asp Gly Pro His His Val Gln Val Leu His Glu Pro Ile Gly  
 195 200 205

Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Phe Ala  
 210 215 220

Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn Thr Val Val Leu Lys  
 225 230 235 240

Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Ala Ser Lys Leu Leu  
 245 250 255

His Glu Ala Gly Leu Pro Asp Gly Val Val Asn Val Val Ser Gly Phe  
 260 265 270

Gly Pro Thr Ala Gly Ala Ala Leu Ala Ser His Met Asp Val Asp Lys  
 275 280 285

Ile Ala Phe Thr Gly Ser Thr Asp Thr Gly Lys Val Val Leu Glu Leu  
 290 295 300

Ala Ala Arg Ser Asn Leu Lys Ser Val Thr Leu Glu Leu Gly Gly Lys  
 305 310 315 320

Ser Pro Phe Ile Ile Met Asp Asp Ala Asp Val Asp His Ala Val Glu  
 325 330 335

Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys Ala  
 340 345 350

Gly Ser Arg Thr Phe Val His Glu Arg Ile Tyr Asp Glu Phe Val Glu  
 355 360 365

Lys Ala Lys Ala Arg Ala Leu Lys Arg Val Val Gly Asp Pro Phe Lys  
 370 375 380

Asn Gly Val Glu Gln Gly Pro Gln Ile Asp Asp Glu Gln Phe Asn Lys  
 385 390 395 400

Ile Leu Arg Tyr Ile Lys Tyr Gly Val Asp Ser Gly Ala Asn Leu Val  
 405 410 415

Thr Gly Gly Asp Arg Leu Gly Asp Lys Gly Tyr Tyr Ile Gln Pro Thr  
 420 425 430

Ile Phe Ser Asp Val Gln Asp Asn Met Arg Ile Ala Gln Glu Glu Ile  
435 440 445

Phe Gly Pro Val Gln Ser Ile Leu Lys Phe Asn Asp Leu Asn Glu Val  
450 455 460

Ile Lys Arg Ala Asn Ala Ser Gln Tyr Gly Leu Ala Ala Gly Val Phe  
465 470 475 480

Thr Asn Asn Leu Asn Thr Ala Asn Thr Leu Thr Arg Ala Leu Arg Val  
485 490 495

Gly Thr Val Trp Val Asn Cys Phe Asp Val Phe Asp Ala Ala Ile Pro  
500 505 510

Phe Gly Gly Tyr Lys Gln Ser Gly Ile Gly Arg Glu Lys Gly Ile Asp  
515 520 525

Ser Leu Lys Asn Tyr Leu Gln Val Lys Ala Val Val Thr Pro Ile Lys  
530 535 540

Asn Ala Ala Trp Leu  
545

<210> 14  
<211> 1757  
<212> DNA  
<213> Zea mays

<400> 14  
gcggccgctg cacctccttt cccacgactc ccgagcgctc tgcgtgtggc gcgcggcagc 60  
atggcgactg cgaacgggag cagcaagggg tcgttcgagg tgcccaaggt ggaggtcagg 120  
ttcaccaagc tcttcacga cggcaagttc gtcgacgccg tctccggcaa gacgttcgag 180  
acccgggacc ctgcaccgg cgaggtgatc gccagcatcg cggagggagg caaggccgac 240  
gtcgacctcg ccgtcaaggc cgcccgggag gccttcgaca acggggccctg gccaggatg 300  
acgggatacg agcgtggtcg gatcctccac aggttcgcgg acctgatcga cgagcacgtg 360  
gaggagctgg cggcgctgga cacggtggac gccggcaagc tggtcgccgt gggcaaggcg 420  
cgggacatcc cgggcgccgc gcacctgctg cgctactacg ccggcgccgc cgacaagggtg 480  
cacggcgcga cgctcaagat ggcgcagcgg atgcacgggt acacgctcaa ggagcccgtg 540  
ggcgtggtgg gccacatcgt gccctggaac taccacacca ccatgttctt cttcaaggta 600



```

gggcccgcgc tcgcccgcgc ctgcgccgtc gtcgtcaagc ccgcccgcgc gacgccgctg 660
tccgcgctct tctacgcgca cctcgccagg gaggcggcg tcccagccgc cgtgctcaac 720
gtcgtgccgc gattcggggc cacggccggg gccgccgtcg ccgcccacat ggacgtcgac 780
aaggtcagct tcaccgggtc cacggagggtc ggccgcctcg tcatgagggc cgcggccgag 840
agcaacctca agcccgtgtc gctcgagctg ggccggcaagt ctcccgatc cgtcttcgac 900
gacgccgacc tcgacatggc cgttaacctc gtcaacttcg ccacctacac caacaagggc 960
gagatctgtg tggccggcac acgcatctac gtgcaggaag ggatctacga cgagttcgtg 1020
aagaaggccg ccgagctcgc cagcaagtcc gtggtcggag acccgttcaa cccgagtgctc 1080
agccaggggc cccaggttga caaggaccag tacgagaagg ttctcaggta cattgacatc 1140
ggaaagcgcg aaggcgccac gctggtcacc ggaggggaagc cctgcggcga caataagggc 1200
tactacatcg agcccacat cttcacggac gtcaaggacg acatgacgat cgcacaggat 1260
gaaatctttg ggccggtgat ggctctcatg aaattcaaga ccgtggagga ggtgatccag 1320
aaagcgaaca acaccgggta cggcctggcc gccggcatcg tgaccaagaa catcgacgtc 1380
gccaacaccg tgtcgcggtc catccgcgcc ggccgcatct ggatcaactg ctacttcgcg 1440
ttcgaccgcg acgcgccgtt cggcgggtac aagatgagcg ggttcggcaa ggacatgggc 1500
atggacgcgc tcgacaagta cctgcagacc aagaccgtcg tccctccgct gtacaacact 1560
ccatggctct gaccgaccga cctctcatcc tgtccgatga acagttcaac atcacaacaa 1620
agaagaaaca tgtcttgtaa gatactctc caaaggatcg ggtgcctgta gctgtactct 1680
tacacctgca tggattgatg tcttgatgat gtagtgcaat gtagcattca gaacaataaa 1740
gacatgtttc ggactgc 1757

```

```

<210> 15
<211> 503
<212> PRT
<213> Zea mays

```

```

<400> 15

```

```

Met Ala Thr Ala Asn Gly Ser Ser Lys Gly Ser Phe Glu Val Pro Lys
1           5           10           15

```

```

Val Glu Val Arg Phe Thr Lys Leu Phe Ile Asp Gly Lys Phe Val Asp
20           25           30

```

```

Ala Val Ser Gly Lys Thr Phe Glu Thr Arg Asp Pro Arg Thr Gly Glu
35           40           45

```

Val Ile Ala Ser Ile Ala Glu Gly Gly Lys Ala Asp Val Asp Leu Ala  
 50 55 60

Val Lys Ala Ala Arg Glu Ala Phe Asp Asn Gly Pro Trp Pro Arg Met  
 65 70 75 80

Thr Gly Tyr Glu Arg Gly Arg Ile Leu His Arg Phe Ala Asp Leu Ile  
 85 90 95

Asp Glu His Val Glu Glu Leu Ala Ala Leu Asp Thr Val Asp Ala Gly  
 100 105 110

Lys Leu Phe Ala Val Gly Lys Ala Arg Asp Ile Pro Gly Ala Ala His  
 115 120 125

Leu Leu Arg Tyr Tyr Ala Gly Ala Ala Asp Lys Val His Gly Ala Thr  
 130 135 140

Leu Lys Met Ala Gln Arg Met His Gly Tyr Thr Leu Lys Glu Pro Val  
 145 150 155 160

Gly Val Val Gly His Ile Val Pro Trp Asn Tyr Pro Thr Thr Met Phe  
 165 170 175

Phe Phe Lys Val Gly Pro Ala Leu Ala Ala Gly Cys Ala Val Val Val  
 180 185 190

Lys Pro Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Tyr Ala His Leu  
 195 200 205

Ala Arg Glu Ala Gly Val Pro Ala Gly Val Leu Asn Val Val Pro Gly  
 210 215 220

Phe Gly Pro Thr Ala Gly Ala Ala Val Ala Ala His Met Asp Val Asp  
 225 230 235 240

Lys Val Ser Phe Thr Gly Ser Thr Glu Val Gly Arg Leu Val Met Arg  
 245 250 255

Ala Ala Ala Glu Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly Gly  
 260 265 270

Lys Ser Pro Val Ile Val Phe Asp Asp Ala Asp Leu Asp Met Ala Val  
 275 280 285

Asn Leu Val Asn Phe Ala Thr Tyr Thr Asn Lys Gly Glu Ile Cys Val  
 290 295 300

Ala Gly Thr Arg Ile Tyr Val Gln Glu Gly Ile Tyr Asp Glu Phe Val  
 305 310 315 320

Lys Lys Ala Ala Glu Leu Ala Ser Lys Ser Val Val Gly Asp Pro Phe  
 325 330 335

Asn Pro Ser Val Ser Gln Gly Pro Gln Val Asp Lys Asp Gln Tyr Glu  
 340 345 350

Lys Val Leu Arg Tyr Ile Asp Ile Gly Lys Arg Glu Gly Ala Thr Leu  
 355 360 365

Val Thr Gly Gly Lys Pro Cys Gly Asp Asn Lys Gly Tyr Tyr Ile Glu  
 370 375 380

Pro Thr Ile Phe Thr Asp Val Lys Asp Asp Met Thr Ile Ala Gln Asp  
 385 390 395 400

Glu Ile Phe Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Val Glu  
 405 410 415

Glu Val Ile Gln Lys Ala Asn Asn Thr Arg Tyr Gly Leu Ala Ala Gly  
 420 425 430

Ile Val Thr Lys Asn Ile Asp Val Ala Asn Thr Val Ser Arg Ser Ile  
 435 440 445

Arg Ala Gly Ala Ile Trp Ile Asn Cys Tyr Phe Ala Phe Asp Pro Asp  
 450 455 460

Ala Pro Phe Gly Gly Tyr Lys Met Ser Gly Phe Gly Lys Asp Met Gly  
 465 470 475 480

Met Asp Ala Leu Asp Lys Tyr Leu Gln Thr Lys Thr Val Val Thr Pro  
 485 490 495

Leu Tyr Asn Thr Pro Trp Leu  
 500

<210> 16  
 <211> 1952  
 <212> DNA  
 <213> Zea mays

<400> 16  
 gcccttcgac tggagcacga ggacactgac atggactgaa ggagtagaaa agagacgagt 60  
 cgagtgaggg ggcagaggcc acaaaacaga gagtacccaa acgatcgatc tgtgcatctc 120  
 cccgtccgtc ccgcaaccat ctaattcaga agcagacatc aatggcgagc aacggctgca 180  
 acggcaacgg caacggcaac ggcaacggca aggcggctcc ggcggtgtg gtggtaccgg 240  
 agatcaagtt caccaagctc ttcattcaacg gcgagttcgt cgacgccgcc tccggcaaga 300  
 cattcgatac cagggaccca cggaccggcg acgtgctggc ccacgtagca gaggcagaca 360  
 aagctgatgt ggacctggcg gtgaagtccg cccgggacgc cttcgagcac ggcaagtggc 420  
 cccgcatgtc aggctacgag cgcggggcga tcatgagcaa gctggcggac ctggtggagc 480  
 agcacacgga ggagctggcg gcgctggacg gtgccgacgc cgggaagctg ctgctgctgg 540  
 gcaagatcat cgacatcccc gcggccacgc agatgctgcg ctactacgcc ggcgccgccg 600  
 acaagatcca cggcgacgtc ctgcgcgtct ccggcaggta ccagggtac acgctcaagg 660  
 agcctatcgg cgtcgtgggc gtcatcatcc cctggaactt cccaccatg atgttcttcc 720  
 tcaaggtcag cccggcgctc gccgcgggct gcaccgtcgt cgtcaagccc gccgagcaga 780  
 cgccgctttc cgcgctctac tacgcgcacc tcgcaaagat ggccggcgtc cccgacggag 840  
 tgatcaacgt cgtccccggg ttcggcccca ccgcggcgcc cgcgctcgcc tcccacatgg 900  
 acgtcgacag cgtggccttc accggctcca cagaggtggg tcgcctcatc atggagtcgg 960  
 ccgcgcggag caacctcaag acggtctcgc tggagctcgg cggcaagtcg ccgctcatca 1020  
 tcttcgacga cgccgacgtc gacatggccg ttaacctgtc gaggcttgcc gtcttcttca 1080  
 acaagggaga ggtttgcgtg gcgggatcgc gcgtgtacgt gcaggaaggg atctatgacg 1140  
 agttcgtcaa gaaggccgtg gagggcgcgc ggagctggaa ggttggagac ccgttcgatg 1200

tcaccagcaa catgggccct caggttgaca aggaccagtt tgagaggggtc ctaaagtaca 1260  
 ttgagcatgg caagagcgag ggagcgactc tgctcaccgg cggcaagcct gccgccgaca 1320  
 aagggtacta cattgagccc accatctttg tcgatgtcac tgaggacatg aagatcgcg 1380  
 aggaagagat cttcggtccc gtcattgtccc tcatgaagtt caagacgggt gatgaggtga 1440  
 tcgagaaggc caactgcacc aggtacgggc tcgccgccgg gatcgtgacc aagagcctgg 1500  
 acgtcgccaa ccgggtgtcc cggtcgggtgc gcgccggcac cgtgtgggtg aactgctact 1560  
 tcgccttcga cccggacgcg cccttcggcg ggtacaagat gagcggcttc ggccgggacc 1620  
 aggggctggc agccatggac aagtacctgc aggtcaagag cgtcatcacc gcgctcccgg 1680  
 actcgccatg gtactgagtt gagccaggga ccgatggaac cccatcgatc tcttcttggt 1740  
 cagtgtacat gcgtcatgcg tgcgtgctca cacagctggg ttgctgcttt gtgcttggtg 1800  
 tcgtctctgg tttgtggctc atgtgtgtta gtctgcacc taccctctg tacgtagctg 1860  
 ccggacatgc aaatagtatg ttaagtacac catataaact cttgttttat aaattcaagt 1920  
 ttagcttggg gccttcactc ccttcagcct tg 1952

<210> 17  
 <211> 511  
 <212> PRT  
 <213> Zea mays

<400> 17

Met Ala Ser Asn Gly Cys Asn Gly Asn Gly Asn Gly Asn Gly Asn Gly  
 1 5 10 15

Lys Ala Ala Pro Ala Gly Val Val Val Pro Glu Ile Lys Phe Thr Lys  
 20 25 30

Leu Phe Ile Asn Gly Glu Phe Val Asp Ala Ala Ser Gly Lys Thr Phe  
 35 40 45

Asp Thr Arg Asp Pro Arg Thr Gly Asp Val Leu Ala His Val Ala Glu  
 50 55 60

Ala Asp Lys Ala Asp Val Asp Leu Ala Val Lys Ser Ala Arg Asp Ala  
 65 70 75 80

Phe Glu His Gly Lys Trp Pro Arg Met Ser Gly Tyr Glu Arg Gly Arg  
 85 90 95

Ile Met Ser Lys Leu Ala Asp Leu Val Glu Gln His Thr Glu Glu Leu  
 100 105 110  
 Ala Ala Leu Asp Gly Ala Asp Ala Gly Lys Leu Leu Leu Leu Gly Lys  
 115 120 125  
 Ile Ile Asp Ile Pro Ala Ala Thr Gln Met Leu Arg Tyr Tyr Ala Gly  
 130 135 140  
 Ala Ala Asp Lys Ile His Gly Asp Val Leu Arg Val Ser Gly Arg Tyr  
 145 150 155 160  
 Gln Gly Tyr Thr Leu Lys Glu Pro Ile Gly Val Val Gly Val Ile Ile  
 165 170 175  
 Pro Trp Asn Phe Pro Thr Met Met Phe Phe Leu Lys Val Ser Pro Ala  
 180 185 190  
 Leu Ala Ala Gly Cys Thr Val Val Val Lys Pro Ala Glu Gln Thr Pro  
 195 200 205  
 Leu Ser Ala Leu Tyr Tyr Ala His Leu Ala Lys Met Ala Gly Val Pro  
 210 215 220  
 Asp Gly Val Ile Asn Val Val Pro Gly Phe Gly Pro Thr Ala Gly Ala  
 225 230 235 240  
 Ala Leu Ala Ser His Met Asp Val Asp Ser Val Ala Phe Thr Gly Ser  
 245 250 255  
 Thr Glu Val Gly Arg Leu Ile Met Glu Ser Ala Ala Arg Ser Asn Leu  
 260 265 270  
 Lys Thr Val Ser Leu Glu Leu Gly Gly Lys Ser Pro Leu Ile Ile Phe  
 275 280 285  
 Asp Asp Ala Asp Val Asp Met Ala Val Asn Leu Ser Arg Leu Ala Val  
 290 295 300  
 Phe Phe Asn Lys Gly Glu Val Cys Val Ala Gly Ser Arg Val Tyr Val  
 305 310 315 320  
 Gln Glu Gly Ile Tyr Asp Glu Phe Val Lys Lys Ala Val Glu Ala Ala  
 325 330 335

Arg Ser Trp Lys Val Gly Asp Pro Phe Asp Val Thr Ser Asn Met Gly  
340 345 350

Pro Gln Val Asp Lys Asp Gln Phe Glu Arg Val Leu Lys Tyr Ile Glu  
355 360 365

His Gly Lys Ser Glu Gly Ala Thr Leu Leu Thr Gly Gly Lys Pro Ala  
370 375 380

Ala Asp Lys Gly Tyr Tyr Ile Glu Pro Thr Ile Phe Val Asp Val Thr  
385 390 395 400

Glu Asp Met Lys Ile Ala Gln Glu Glu Ile Phe Gly Pro Val Met Ser  
405 410 415

Leu Met Lys Phe Lys Thr Val Asp Glu Val Ile Glu Lys Ala Asn Cys  
420 425 430

Thr Arg Tyr Gly Leu Ala Ala Gly Ile Val Thr Lys Ser Leu Asp Val  
435 440 445

Ala Asn Arg Val Ser Arg Ser Val Arg Ala Gly Thr Val Trp Val Asn  
450 455 460

Cys Tyr Phe Ala Phe Asp Pro Asp Ala Pro Phe Gly Gly Tyr Lys Met  
465 470 475 480

Ser Gly Phe Gly Arg Asp Gln Gly Leu Ala Ala Met Asp Lys Tyr Leu  
485 490 495

Gln Val Lys Ser Val Ile Thr Ala Leu Pro Asp Ser Pro Trp Tyr  
500 505 510

<210> 18

<211> 2195

<212> DNA

<213> Zea mays

<400> 18

cccaaacc aa atccaagcgc aagagggggc aaagccgcaa aggggggaggc accaggcacc 60

ggcagccatt acttactggt cctcactccc acaccaacca accaacctcc tctgcctgcc 120

gcttctcctg ctgcggggcg gcactgctgc aagtactaga ggaggacatc cgcttccatt 180

actgcgcctg cggaggatcg gaggaaccag tagcggaggc ttcgattttc ggcgggcgca 240

ataaatttcc	cgcattggctc	ggagggccgc	gtcctcgctc	gtctcccgtc	gcctcctggc	300
gagggccct	gccggcgcgc	cgcctcgctc	ccctctcg	ccgcgcagga	cagtgcctgc	360
agatgggatg	cacaggctgt	tgccagggtgt	ccttcagagg	ttcagcactg	cagcagcagt	420
agaggagccc	atcacgccgt	cagtccatgt	gaactacaca	aagctcctca	ttaatgggaa	480
ctttgttgat	tccgcatccg	gcaagacctt	cccaactctg	gaccctcgta	caggggaggt	540
gattgctcat	gtggctgagg	gtgacgcaga	ggacattaac	cgtgcagtag	ctgcggctcg	600
caaggctttt	gatgaagggc	catggccgaa	gatgactgcc	tatgagaggt	cccgtatcct	660
actgcggttt	gctgatttga	tagagaagca	caatgacgag	cttgctgctt	tggagacatg	720
ggacaacggg	aagccatatg	agcaagcagc	ccagattgaa	gtacccatgg	tggcccgctc	780
tatgcgttac	tatgctgggt	gggctgataa	gatccatggg	ctcattgtgc	cggtgatgg	840
cccacaccat	gtacagatct	tgcattgagc	aattgggtgt	gcaggtcaga	tcattcccatg	900
gaactttcct	cttctgatgt	atgcctggaa	agttggccct	gctttggcat	gtggaaatac	960
tctcgtgctc	aagactgctg	aacaaacccc	tctatcggct	ttgtatatct	ccaaattgtt	1020
gcatgaggct	ggactacctg	aggggtgtgt	gaatgtcggt	tctgggtttg	gccctactgc	1080
tgggtgctgct	cttgctagtc	acatggatgt	tgataagatc	gcatttactg	gatctaccga	1140
tactggaaaa	attattctcg	agttggctgc	aaagagcaac	cttaagacag	tgacactgga	1200
gttaggaggg	aagtcccctt	tcattcataat	ggacgatgct	gatgttgacc	atgctgttga	1260
gcttgccgac	tttgccctgt	tctttaacca	gggacaatgc	tgctgcgctg	gatctcgcac	1320
gtttgtacat	gagcgtgttt	atgatgagtt	tgtggagaag	gccaaaggctc	gtgcattgaa	1380
gcgcgtcggt	ggtgatccgt	tcaggaaagg	tgttgaaacag	ggcccgacaga	ttgacgacga	1440
gcaattcaac	aagatcttgc	gctacattag	gtatgggtgt	gacgggtggag	ctacccttgt	1500
gacgggtggg	gataggttgg	gtgacaaggg	tttctacatc	cagccaacga	ttttctcaga	1560
tgtccaggac	ggcatgaaga	ttgctcagga	ggagatattt	gggcctgtgc	agtcgatcct	1620
caagttcaaa	gacctcaatg	aggttatcaa	gagggcaaac	gcgagccagt	atggattggc	1680
cgcggcgctg	ttcaccaaca	gcctggacac	ggccaacacc	ctgacgcgcg	cgtcagggc	1740
cgggaccgtc	tgggtgaact	gcttcgacgt	cttcgatgct	gcgattccgt	ttggtgggta	1800
caagatgagc	ggcatcggga	gggagaaggg	cgttgacagc	ctgaagaact	acctgcaggt	1860
gaaggcggtc	gtcaccctaa	tcaagaacgc	cgcgtgggtg	tagacgctgc	aagtgtggcc	1920
ttgtgcacga	gaaccacgta	tattcatttc	ctgggtcacat	ccccgaacaa	tgtgaaggcg	1980



ttaatcagat agatgacgat gaagaagaac aactataata agatttgccc tagcctgggt 2040  
tctcagttat ctctaataag ttttatgggt ggtgcctata tattgtgcaa tttggttgct 2100  
cccttttatt ttgtttcttt ttgataagac tgttctagca acggatatgc agagttcatt 2160  
atgaaaatgc atttgttagt gtctttgatg gttaa 2195

<210> 19  
<211> 549  
<212> PRT  
<213> Zea mays

<400> 19

Met Ala Arg Arg Ala Ala Ser Ser Leu Val Ser Arg Cys Leu Leu Ala  
1 5 10 15

Arg Ala Pro Ala Gly Ala Pro Pro Ala Ala Pro Ser Ala Pro Arg Arg  
20 25 30

Thr Val Pro Ala Asp Gly Met His Arg Leu Leu Pro Gly Val Leu Gln  
35 40 45

Arg Phe Ser Thr Ala Ala Ala Val Glu Glu Pro Ile Thr Pro Ser Val  
50 55 60

His Val Asn Tyr Thr Lys Leu Leu Ile Asn Gly Asn Phe Val Asp Ser  
65 70 75 80

Ala Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro Arg Thr Gly Glu Val  
85 90 95

Ile Ala His Val Ala Glu Gly Asp Ala Glu Asp Ile Asn Arg Ala Val  
100 105 110

Ala Ala Ala Arg Lys Ala Phe Asp Glu Gly Pro Trp Pro Lys Met Thr  
115 120 125

Ala Tyr Glu Arg Ser Arg Ile Leu Leu Arg Phe Ala Asp Leu Ile Glu  
130 135 140

Lys His Asn Asp Glu Leu Ala Ala Leu Glu Thr Trp Asp Asn Gly Lys  
145 150 155 160

Pro Tyr Glu Gln Ala Ala Gln Ile Glu Val Pro Met Val Ala Arg Leu  
165 170 175

Met Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Ile His Gly Leu Ile Val  
180 185 190

Pro Ala Asp Gly Pro His His Val Gln Ile Leu His Glu Pro Ile Gly  
195 200 205

Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Tyr Ala  
210 215 220

Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn Thr Leu Val Leu Lys  
225 230 235 240

Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Tyr Ile Ser Lys Leu Leu  
245 250 255

His Glu Ala Gly Leu Pro Glu Gly Val Val Asn Val Val Ser Gly Phe  
260 265 270

Gly Pro Thr Ala Gly Ala Ala Leu Ala Ser His Met Asp Val Asp Lys  
275 280 285

Ile Ala Phe Thr Gly Ser Thr Asp Thr Gly Lys Ile Ile Leu Glu Leu  
290 295 300

Ala Ala Lys Ser Asn Leu Lys Thr Val Thr Leu Glu Leu Gly Gly Lys  
305 310 315 320

Ser Pro Phe Ile Ile Met Asp Asp Ala Asp Val Asp His Ala Val Glu  
325 330 335

Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys Ala  
340 345 350

Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp Glu Phe Val Glu  
355 360 365

Lys Ala Lys Ala Arg Ala Leu Lys Arg Val Val Gly Asp Pro Phe Arg  
370 375 380

Lys Gly Val Glu Gln Gly Pro Gln Ile Asp Asp Glu Gln Phe Asn Lys  
385 390 395 400

Ile Leu Arg Tyr Ile Arg Tyr Gly Val Asp Gly Gly Ala Thr Leu Val  
405 410 415

Thr Gly Gly Asp Arg Leu Gly Asp Lys Gly Phe Tyr Ile Gln Pro Thr  
420 425 430

Ile Phe Ser Asp Val Gln Asp Gly Met Lys Ile Ala Gln Glu Glu Ile  
435 440 445

Phe Gly Pro Val Gln Ser Ile Leu Lys Phe Lys Asp Leu Asn Glu Val  
450 455 460

Ile Lys Arg Ala Asn Ala Ser Gln Tyr Gly Leu Ala Ala Gly Val Phe  
465 470 475 480

Thr Asn Ser Leu Asp Thr Ala Asn Thr Leu Thr Arg Ala Leu Arg Ala  
485 490 495

Gly Thr Val Trp Val Asn Cys Phe Asp Val Phe Asp Ala Ala Ile Pro  
500 505 510

Phe Gly Gly Tyr Lys Met Ser Gly Ile Gly Arg Glu Lys Gly Val Asp  
515 520 525

Ser Leu Lys Asn Tyr Leu Gln Val Lys Ala Val Val Thr Pro Ile Lys  
530 535 540

Asn Ala Ala Trp Leu  
545

<210> 20  
<211> 1881  
<212> DNA  
<213> Zea mays

<400> 20  
aaggccatcg ctctcctagc ctcggagact tgcctttgca tacacatccc cccggagggc 60  
ggtggccgga gctgaccct gatcggaagc gcttagcgcc tgagggcatg gctgcaaccg 120  
tgaggagggc tgcttctctc gtctctctc gcttctctc caciaagcct tcgccttcgc 180  
ctgcttctgc cgccggcaat aattccgctc tctcggatc aggggctgct gctcttcaca 240  
ggttcagcac cgcaccggca tccgcggccg cggccgcaga ggagccgatc cagccccgcg 300  
tggaggtgaa gcacaccag ctctcatca atggcaactt cgtcgacgct gcttctggga 360

agacgttccc gacgctggac ccgcgcaccg gcgaggatcat cgcgcgcgtc gccgagggcg	420
acagcgagga catcgaccgc gccgtggccg ccgcccgcag ggccttcgac gagggcccgt	480
ggccgaggat gaccgcctac gatcggtgcc gcgtgctgct gcgcttcgcg gacctgatcg	540
agcggcacgc ggaggaggtc gcggcgctgg agacgtggga caacggcaag acgctggcgc	600
agggcgcggg ggccgagggtg cccatgggtg cgcggtgctt ccggtactac gccggctggg	660
cggacaagat ccacggcctg gtggcgccgg ccgacggcgc gcaccacgtg cagggtgctgc	720
acgagccggt cggcgtggcc ggccagatca tcccctggaa cttcccgtg ctcatgttcg	780
cctggaaggt cggcccggcg ctgcctgctg gcaacaccgt cgtcctcaag accgccgagc	840
agacgccgt ctccgcgtc tacgtggcca acctcctcca cgaggctggg cccccgagg	900
gtgttctgaa cgtggtgtcc ggcttcggcc cgacggccgg cgcagcgtc tccagccaca	960
tgggtgtcga caagcttgctg ttcacgggat cgacgggcac ggggcagatc gtgctcgagc	1020
tggcggcgag gagcaacctt aagccggtga cgctggagct cgggtggcaag tcccctttca	1080
tcgtcatgga cgacgccgac gtcgaccagg ccgtcgagct cgcgcaccag gcggtcttct	1140
tcaaccagg ccaatgctgc tgcgccgggt cgcggacgtt cgtgcacgag cgcgtgtacg	1200
acgagttcgt ggagaagtc aaggcccgcg ccctgaagcg cgtcgtcggc gacccttca	1260
gggacggggt cgaacagggg cctcagatcg acggcgagca attcaacaag atcttgcggt	1320
acgtccagtc cggcgtcgac agcgggtgcca cctcgtcgc cggcggcgac agggtaggcg	1380
acaggggctt ctacatacag ccgacgggtg ttgccgacgc caaggacgaa atgaagatcg	1440
ctcgggagga gatattcggg ccggtgcaaa ccattctcaa gttcagcggc gtggaggagg	1500
tgatccggcg cgcgaacgc acgccctac ggctggcggc gggggtgttc acgcggagcc	1560
tggacgcggc caacacctg tcgcgggcgc tgcgggcggg caccgtgtgg gtgaactgct	1620
acgacgtgtt cgacgccacc atcccgttcg gcggctacaa gatgagcggc gtcgggcggg	1680
agaagggcat ctacgccctc cgcaactacc tccagacaaa ggccgtcgtc acacccatca	1740
agaacccgc atggctgtaa atcacatcct ccgtccttgc ccgcacggcg ctgcgccggt	1800
tctcggagaa cgtgacgaat aaaacaaacg gtttggttaa aaagacaagg acgacggaaa	1860
aaaaaaaaa aaaaaaaaaa a	1881

<210> 21  
 <211> 550  
 <212> PRT  
 <213> Zea mays

<400> 21

Met Ala Ala Thr Val Arg Arg Ala Ala Ser Ser Val Leu Ser Arg Phe  
 1 5 10 15

Leu Leu Thr Lys Pro Ser Pro Ser Pro Ala Ser Ala Ala Gly Asn Asn  
 20 25 30

Ser Ala Leu Leu Gly Ser Gly Ala Ala Ala Leu His Arg Phe Ser Thr  
 35 40 45

Ala Pro Ala Ser Ala Ala Ala Ala Ala Glu Glu Pro Ile Gln Pro Ala  
 50 55 60

Val Glu Val Lys His Thr Gln Leu Leu Ile Asn Gly Asn Phe Val Asp  
 65 70 75 80

Ala Ala Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro Arg Thr Gly Glu  
 85 90 95

Val Ile Ala Arg Val Ala Glu Gly Asp Ser Glu Asp Ile Asp Arg Ala  
 100 105 110

Val Ala Ala Ala Arg Arg Ala Phe Asp Glu Gly Pro Trp Pro Arg Met  
 115 120 125

Thr Ala Tyr Asp Arg Cys Arg Val Leu Leu Arg Phe Ala Asp Leu Ile  
 130 135 140

Glu Arg His Ala Glu Glu Val Ala Ala Leu Glu Thr Trp Asp Asn Gly  
 145 150 155 160

Lys Thr Leu Ala Gln Ala Ala Gly Ala Glu Val Pro Met Val Ala Arg  
 165 170 175

Cys Val Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Ile His Gly Leu Val  
 180 185 190

Ala Pro Ala Asp Gly Ala His His Val Gln Val Leu His Glu Pro Val  
 195 200 205

Gly Val Ala Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Phe  
 210 215 220

Ala Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn Thr Val Val Leu  
 225 230 235 240

Lys Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Tyr Val Ala Asn Leu  
 245 250 255

Leu His Glu Ala Gly Leu Pro Glu Gly Val Leu Asn Val Val Ser Gly  
 260 265 270

Phe Gly Pro Thr Ala Gly Ala Ala Leu Ser Ser His Met Gly Val Asp  
 275 280 285

Lys Leu Ala Phe Thr Gly Ser Thr Gly Thr Gly Gln Ile Val Leu Glu  
 290 295 300

Leu Ala Ala Arg Ser Asn Leu Lys Pro Val Thr Leu Glu Leu Gly Gly  
 305 310 315 320

Lys Ser Pro Phe Ile Val Met Asp Asp Ala Asp Val Asp Gln Ala Val  
 325 330 335

Glu Leu Ala His Gln Ala Val Phe Phe Asn Gln Gly Gln Cys Cys Cys  
 340 345 350

Ala Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp Glu Phe Val  
 355 360 365

Glu Lys Ser Lys Ala Arg Ala Leu Lys Arg Val Val Gly Asp Pro Phe  
 370 375 380

Arg Asp Gly Val Glu Gln Gly Pro Gln Ile Asp Gly Glu Gln Phe Asn  
 385 390 395 400

Lys Ile Leu Arg Tyr Val Gln Ser Gly Val Asp Ser Gly Ala Thr Leu  
 405 410 415

Val Ala Gly Gly Asp Arg Val Gly Asp Arg Gly Phe Tyr Ile Gln Pro  
420 425 430

Thr Val Phe Ala Asp Ala Lys Asp Glu Met Lys Ile Ala Arg Glu Glu  
435 440 445

Ile Phe Gly Pro Val Gln Thr Ile Leu Lys Phe Ser Gly Val Glu Glu  
450 455 460

Val Ile Arg Arg Ala Asn Ala Thr Pro Tyr Gly Leu Ala Ala Gly Val  
465 470 475 480

Phe Thr Arg Ser Leu Asp Ala Ala Asn Thr Leu Ser Arg Ala Leu Arg  
485 490 495

Ala Gly Thr Val Trp Val Asn Cys Tyr Asp Val Phe Asp Ala Thr Ile  
500 505 510

Pro Phe Gly Gly Tyr Lys Met Ser Gly Val Gly Arg Glu Lys Gly Ile  
515 520 525

Tyr Ala Leu Arg Asn Tyr Leu Gln Thr Lys Ala Val Val Thr Pro Ile  
530 535 540

Lys Asn Pro Ala Trp Leu  
545 550

<210> 22  
<211> 2071  
<212> DNA  
<213> Nicotiana tabacum

<400> 22  
ggttcttcaa ttcattacag tgagaaactt tcatttgctc tactgttcat attaatggcg 60  
gctcgtgtgt ttacctctcg tctctctcgc tctttgacat cctcttctca tctgctctca 120  
agaggtttga tcattgtgga taagcaaaaa tcccatctgg gcagaatagc tgcttatcaa 180  
tacagcacgg cggctgctat tgaggaaccg atcaaaccag ctgtcaatgt ggaacatact 240  
aaacttttta tcaatggcca atttgttgat gctgcatcag gaaaaacatt ccctaccctt 300  
gaccccagga caggggaggt aattgcacat gttgctgaag gtgatgcaga agatattaat 360  
cgggcagtag ctgctgctcg taaggctttt gacgaaggac catggcctaa aatgaatgct 420  
tatgaaaggt caaagatatt cgtacgcctt gctgatctga ttgaaaaaca taacgatcaa 480

attgcaacgc tcgagacttg ggatactggg aagccgtatg aacaggctgc taagattgaa	540
gtaccaatgg ttgtacgtct actccgttat tatgctggct gggcagataa aattcatgg	600
atgactattc ctgcagatgg accatatcat gttcagacat tgcacgaacc aattgggggtt	660
gctggtcaga ttatcccatg gaactttcct cttctcatgt tttcttgga gattggacct	720
gcttttagctt gtgggaacac tgtcgtgcta aagacagctg agcagacacc attatctgca	780
ttctacgtag cacatctgtt acaggaggct gggctgcctg aagggtgtttt gaacatcatt	840
tctggttttg gtccaacagc tgggtgctcct ctttgtagtc atatggatgt cgataagctt	900
gcttttactg gatcgacaga tacaggaaaa gctatacttt cactggctgc taagagcaat	960
cttaagccgg tgactttgga acttgagggg aaatcccctt ttattgtttg tgaggatgct	1020
gatattgata cggccgttga acaagctcac tttgctctct tctttaatca ggggcaatgt	1080
tgctgtgctg gatctcggac ttttggtcac gagaaagttt atgatgaatt tcttgagaag	1140
gcaaaggcac gtgccttgaa acgaacagtt ggtgatccgt ttaaatacagg cactgagcag	1200
ggtcctcaga ttgattcaaa acagtttgat aagatcatga attacattag atctgggtatc	1260
gatagtggag caactcttga aactggaggt gagcgacttg gtgaacgggg atactatatt	1320
aagcccacag ttttctctaa cgttaaggac gatatgctga ttgcacaaga tgaaatattt	1380
ggtcagtgac agtccatctt aaaatttaag gatgttgatg atgtgatacg gagagcta	1440
aacagtcggg atgggtctagc tgctggagta ttacacaga acattgacac tgcaaacaca	1500
ttgacacgag ccttgagagt tggaacggta tgggttaatt gctttgatac cttcgatgct	1560
acaattcctt ttgggtgggt taaaatgagt ggacacggaa gagaaaaggg agaatacagt	1620
ctcaagaatt acttgcaagt aaaggcagtt gtgaccccat tgaagaatcc tgcattggtta	1680
taaacatgat cctcctcagc aatttttaca aataaaacta tatcaagttg ctttatttta	1740
tgatgctgat gacgattaag tgttggtttt ctttaaaact tgctactata agcaaactgc	1800
aattaatttt aacaggcagc agggtttatt gaaagctgcc aaattgccaa atttgccatc	1860
ctttccatac ctttttttta agattagtct tcttgttttt tctactcctc tgcaaggagt	1920
tgttctcttt ttaaattttt attgctcaaa atatgctgcc tccgaatagt ttgggagtga	1980
ggcatgattg ttggttgat tcatgtgtt aaaatataaa gactagaaca aaaagaaaca	2040
ctaaggaatt ctatgtttac tattatgttt t	2071



<210> 23  
 <211> 542  
 <212> PRT  
 <213> Nicotiana tabacum

<400> 23

Met Ala Ala Arg Val Phe Thr Ser Arg Leu Ser Arg Ser Leu Thr Ser  
 1 5 10 15

Ser Ser His Leu Leu Ser Arg Gly Leu Ile Ile Val Asp Lys Gln Lys  
 20 25 30

Ser His Leu Gly Arg Ile Ala Ala Tyr Gln Tyr Ser Thr Ala Ala Ala  
 35 40 45

Ile Glu Glu Pro Ile Lys Pro Ala Val Asn Val Glu His Thr Lys Leu  
 50 55 60

Phe Ile Asn Gly Gln Phe Val Asp Ala Ala Ser Gly Lys Thr Phe Pro  
 65 70 75 80

Thr Leu Asp Pro Arg Thr Gly Glu Val Ile Ala His Val Ala Glu Gly  
 85 90 95

Asp Ala Glu Asp Ile Asn Arg Ala Val Ala Ala Ala Arg Lys Ala Phe  
 100 105 110

Asp Glu Gly Pro Trp Pro Lys Met Asn Ala Tyr Glu Arg Ser Lys Ile  
 115 120 125

Phe Val Arg Leu Ala Asp Leu Ile Glu Lys His Asn Asp Gln Ile Ala  
 130 135 140

Thr Leu Glu Thr Trp Asp Thr Gly Lys Pro Tyr Glu Gln Ala Ala Lys  
 145 150 155 160

Ile Glu Val Pro Met Val Val Arg Leu Leu Arg Tyr Tyr Ala Gly Trp  
 165 170 175

Ala Asp Lys Ile His Gly Met Thr Ile Pro Ala Asp Gly Pro Tyr His  
 180 185 190

Val Gln Thr Leu His Glu Pro Ile Gly Val Ala Gly Gln Ile Ile Pro  
 195 200 205

Trp Asn Phe Pro Leu Leu Met Phe Ser Trp Lys Ile Gly Pro Ala Leu  
210 215 220

Ala Cys Gly Asn Thr Val Val Leu Lys Thr Ala Glu Gln Thr Pro Leu  
225 230 235 240

Ser Ala Phe Tyr Val Ala His Leu Leu Gln Glu Ala Gly Leu Pro Glu  
245 250 255

Gly Val Leu Asn Ile Ile Ser Gly Phe Gly Pro Thr Ala Gly Ala Pro  
260 265 270

Leu Cys Ser His Met Asp Val Asp Lys Leu Ala Phe Thr Gly Ser Thr  
275 280 285

Asp Thr Gly Lys Ala Ile Leu Ser Leu Ala Ala Lys Ser Asn Leu Lys  
290 295 300

Pro Val Thr Leu Glu Leu Gly Gly Lys Ser Pro Phe Ile Val Cys Glu  
305 310 315 320

Asp Ala Asp Ile Asp Thr Ala Val Glu Gln Ala His Phe Ala Leu Phe  
325 330 335

Phe Asn Gln Gly Gln Cys Cys Cys Ala Gly Ser Arg Thr Phe Val His  
340 345 350

Glu Lys Val Tyr Asp Glu Phe Leu Glu Lys Ala Lys Ala Arg Ala Leu  
355 360 365

Lys Arg Thr Val Gly Asp Pro Phe Lys Ser Gly Thr Glu Gln Gly Pro  
370 375 380

Gln Ile Asp Ser Lys Gln Phe Asp Lys Ile Met Asn Tyr Ile Arg Ser  
385 390 395 400

Gly Ile Asp Ser Gly Ala Thr Leu Glu Thr Gly Gly Glu Arg Leu Gly  
405 410 415

Glu Arg Gly Tyr Tyr Ile Lys Pro Thr Val Phe Ser Asn Val Lys Asp  
 420 425 430

Asp Met Leu Ile Ala Gln Asp Glu Ile Phe Gly Pro Val Gln Ser Ile  
 435 440 445

Leu Lys Phe Lys Asp Val Asp Asp Val Ile Arg Arg Ala Asn Asn Ser  
 450 455 460

Arg Tyr Gly Leu Ala Ala Gly Val Phe Thr Gln Asn Ile Asp Thr Ala  
 465 470 475 480

Asn Thr Leu Thr Arg Ala Leu Arg Val Gly Thr Val Trp Val Asn Cys  
 485 490 495

Phe Asp Thr Phe Asp Ala Thr Ile Pro Phe Gly Gly Tyr Lys Met Ser  
 500 505 510

Gly His Gly Arg Glu Lys Gly Glu Tyr Ser Leu Lys Asn Tyr Leu Gln  
 515 520 525

Val Lys Ala Val Val Thr Pro Leu Lys Asn Pro Ala Trp Leu  
 530 535 540

<210> 24  
 <211> 1713  
 <212> DNA  
 <213> Hordeum vulgare

<400> 24  
 ttcggcacga ggaacacaaac ctcccttcccc tctctccacg taggccaagg gacgaagcga 60  
 agggaacggg cgacgtcgat ggcggcagcg aacggcgcc aggggtttga ggtgccggaa 120  
 ctggacatca agttcaccaa gctcttcacg aatggccagt tcgtcgacgc agcttcaggc 180  
 aagacgttcg agaccggga cccacgcacc ggcgaggtga tcgccaggat cgccgaggga 240  
 gacaaggccg acatcgacct cgccgtgaag gccgcccgcg acgccttcga caacggcccc 300  
 tggcccagaa tgcccggtcg cgcaaggga aggatcctgc acaagttcgc cgacctggtc 360  
 gaccagcacg tggaggagct ggcggcgctg gacacggtgg acgccggcaa gctgttccag 420  
 atgggcaagc tgggtggacat ccccgagggc gccaacctgc tccggtacta cgccggtgcc 480  
 gccgacaaga tccacggcga gacgctcaag atggcgcggc cgctgcacgg gtacacgctc 540  
 aaggagcccg tcggcgctcg gggccacatc gtgccctgga actacccac caccatgttc 600

ttcttcaagg tcagccccgc gctcgccgcc ggggtgcacca tggtcgtcaa gccggccgag 660  
 cagacgcccc tctccgcgt cttctacgt cacctcgcca aggaggccgg gatccccgac 720  
 ggcgtcctca acgtcgtgcc cggctttggc ccgacggccg gtgcggccat ggcttctcac 780  
 atggacatcg acaagatcag cttcacggga tccacggagg tcgggagggt ggatcatgcag 840  
 gcggcgcccc tgagcaacct caagcccgtc tcgctggagc tggggggcaa gtccccgac 900  
 atcgtgtttg acgacgccga tgttgacatg gccgtgagcc tcgttaacat ggccacctac 960  
 accaacaagg gcgagatctg cgtcgctggc acgcgcatat acgtgcagga agggatctac 1020  
 gacgcctttg tgaacaagtc agtggagctt gccaaagaaat ccgtggtcgg agatcctttc 1080  
 aaccggaacg tacatcaagg tcctcagggt gacaagaatc aatacgagaa ggtcctcaag 1140  
 tacatcgacg tcggtaagag cgaaggcgcc accctactca ccggagggaa ggcttcgacg 1200  
 gacaagggtt actacatcga gcccgccatc ttcaccgacg tcaaggatga catgtcgatt 1260  
 gcgcaagagg aaatcttcgg gccgggtgatg gctctcatga aattcaagac aatggaggag 1320  
 gtgattcaga aggcgaacag caccgcctat ggcttgcccg ccggcggtgt gaccaagaac 1380  
 atcgacacca tgaacaccgt gtcgcggctg gtcagggtccg gggtcgtctg ggttaactgc 1440  
 tacttcgctt tcgaccggga cgcgccgttc ggcggctgca agatgagcgg cttcggcaag 1500  
 gacatgggca cggatgccct cgacaagtac ctgcacacca agacgggtgt cactccactc 1560  
 tacaacacgc cctggttgat atctggacgg acatccgacg gaaacgcacg gggaaagatt 1620  
 tcctagtatt atataatatt tatacagctg gatgctttca gggttacttct gcagttgtac 1680  
 ttattacttg tggccaatct ttttcgtggt att 1713

<210> 25  
 <211> 500  
 <212> PRT  
 <213> Hordeum vulgare

<400> 25

Met Ala Ala Ala Asn Gly Gly Gln Gly Phe Glu Val Pro Glu Leu Asp  
 1 5 10 15

Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Gln Phe Val Asp Ala Ala  
 20 25 30

Ser Gly Lys Thr Phe Glu Thr Arg Asp Pro Arg Thr Gly Glu Val Ile  
 35 40 45

Ala Arg Ile Ala Glu Gly Asp Lys Ala Asp Ile Asp Leu Ala Val Lys  
50 55 60

Ala Ala Arg Asp Ala Phe Asp Asn Gly Pro Trp Pro Arg Met Pro Gly  
65 70 75 80

Cys Ala Arg Ala Arg Ile Leu His Lys Phe Ala Asp Leu Val Asp Gln  
85 90 95

His Val Glu Glu Leu Ala Ala Leu Asp Thr Val Asp Ala Gly Lys Leu  
100 105 110

Phe Gln Met Gly Lys Leu Val Asp Ile Pro Gly Gly Ala Asn Leu Leu  
115 120 125

Arg Tyr Tyr Ala Gly Ala Ala Asp Lys Ile His Gly Glu Thr Leu Lys  
130 135 140

Met Ala Arg Pro Leu His Gly Tyr Thr Leu Lys Glu Pro Val Gly Val  
145 150 155 160

Val Gly His Ile Val Pro Trp Asn Tyr Pro Thr Thr Met Phe Phe Phe  
165 170 175

Lys Val Ser Pro Ala Leu Ala Ala Gly Cys Thr Met Val Val Lys Pro  
180 185 190

Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Tyr Ala His Leu Ala Lys  
195 200 205

Glu Ala Gly Ile Pro Asp Gly Val Leu Asn Val Val Pro Gly Phe Gly  
210 215 220

Pro Thr Ala Gly Ala Ala Met Ala Ser His Met Asp Ile Asp Lys Ile  
225 230 235 240

Ser Phe Thr Gly Ser Thr Glu Val Gly Arg Leu Val Met Gln Ala Ala  
245 250 255

Ala Leu Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly Gly Lys Ser  
260 265 270

Pro Ile Ile Val Phe Asp Asp Ala Asp Val Asp Met Ala Val Ser Leu  
275 280 285

Val Asn Met Ala Thr Tyr Thr Asn Lys Gly Glu Ile Cys Val Ala Gly  
290 295 300

Thr Arg Ile Tyr Val Gln Glu Gly Ile Tyr Asp Ala Phe Val Asn Lys  
305 310 315 320

Ser Val Glu Leu Ala Lys Lys Ser Val Val Gly Asp Pro Phe Asn Pro  
325 330 335

Asn Val His Gln Gly Pro Gln Val Asp Lys Asn Gln Tyr Glu Lys Val  
340 345 350

Leu Lys Tyr Ile Asp Val Gly Lys Ser Glu Gly Ala Thr Leu Leu Thr  
355 360 365

Gly Gly Lys Ala Cys Ser Asp Lys Gly Tyr Tyr Ile Glu Pro Ala Ile  
370 375 380

Phe Thr Asp Val Lys Asp Asp Met Ser Ile Ala Gln Glu Glu Ile Phe  
385 390 395 400

Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Met Glu Glu Val Ile  
405 410 415

Gln Lys Ala Asn Ser Thr Arg Tyr Gly Leu Ala Ala Gly Val Val Thr  
420 425 430

Lys Asn Ile Asp Thr Met Asn Thr Val Ser Arg Ser Val Arg Ser Gly  
435 440 445

Val Val Trp Val Asn Cys Tyr Phe Ala Phe Asp Pro Asp Ala Pro Phe  
450 455 460

Gly Gly Cys Lys Met Ser Gly Phe Gly Lys Asp Met Gly Thr Asp Ala  
465 470 475 480

Leu Asp Lys Tyr Leu His Thr Lys Thr Val Val Thr Pro Leu Tyr Asn  
485 490 495

Thr Pro Trp Leu  
500

<210> 26  
 <211> 2212  
 <212> DNA  
 <213> Hordeum vulgare

<400> 26  
 cggcacgagg caccatcact gctcctcagc actctttccc cctccgcgca gctggggacg 60  
 ccctaccatt tactactgag cctctgaacc cggaggacga gaagaattga ttgctgatcc 120  
 ggcgcaaacc aacagattct tcttgctcc gccgagatca tcatcatggc tgetgccgcc 180  
 acgaggaggg ccgcctctc gctcgtctcc cgtgcctgc tctccaggcc cgcagcttcc 240  
 cccgccgtg tccccctgc gctccgcagg gcagatgggg cacgtggatt gttgcctgga 300  
 ctcttccaga ggttcggcac tgcagcagca gcagaggaac ccatctcgcc ttctgtccaa 360  
 gtgggcgaga cacagctcct catcaacggc aaattcgttg atgctgcac tggcaagact 420  
 ttcccgactc tggacctcg caccggggag gtgattgccc gtgtgtctga aggagatgcc 480  
 gaagatgttg accgtgcagt tgttgccgcc cgcaaggcat tcgatgaagg gccatggcca 540  
 aagatgactg cctatgagag gtcccgatt cttttgcgat ttgctgattt gatagagaaa 600  
 cacaatgatg aaattgctgc actggagacg tgggacaacg ggaagcccta tgagcaagct 660  
 gccacatcg aagtgccaat gcttgctcgg cttatgcggc actatgcagg ctggactgac 720  
 aagatccatg gcctcatcgt accggctgat ggcccgacc atgtacaggc gctgcatgag 780  
 ccgattggtg tcgtgggtca gatcatcccg tggaaacttc cacttttgat gtatggctgg 840  
 aaagttggcc ctgctttggc ctgtgggaac actattgttc tcaagaccgc tgaacaaact 900  
 cctctatctg ccctctatgt ttctaagctg ttgcatgagg ctggactacc cgaagggtgc 960  
 ctgaacatca tatctggttt tggctctacc gctggggctg ctcttgctgg ccacatggac 1020  
 gttgacaaga ttgcattcac tggatcaacc gatactggga aagttattct tgagttatct 1080  
 gcacggagca atcttaaggc agtgacactg gagctaggag gcaagtctcc ttttatcgtc 1140  
 atggatgatg cagatattga ccaagctgtt gagcttgccg attttgcgct gtttttcaac 1200  
 caggggcaat gctgctgcgc tgggtctcgc acgttcgtac atgagcgtgt ttatgatgag 1260  
 tttgttgaga agtcaaaggc tcgtgctttg aagcgtgtag ttggtgatcc attcaggaaa 1320  
 ggtgttgagc agggctctca gattgatgat gagcaattca agaagatctt gcgctacatt 1380  
 aagtcgggtg tcgacagtgg agccaccctt gtgacgggtg gtgacaagtt gggtgacaaa 1440  
 ggttactaca tccagccaac aattttctca gatgtgcagg atgacatgaa gatagcccag 1500  
 gaggagatat tcgggcctgt tcagtcaatc ttcaagttca atgacctcaa cgaggatgc 1560

```

aagagggcga acgcaagcca gtacggattg gccgccggcg tttttaccaa caacctggac 1620
acggccaaca ccttgacgcg tgccctcagg gccggcacga tctgggtgaa ctgctttgac 1680
atcttcgatg ccgcgatccc cttcggcggg tacaagatga gcggcatcgg tagggagaag 1740
ggcatcgaca gcctgaagaa ctacctgcaa gtcaaggcgg tcgtcaccgc gcttaagaac 1800
cctgcgtggt tgtgagcata gcacacctat ggtcttctga gtctgagata ccggacaacg 1860
tgaagacgca gggacaattg gatgagaaaa aaagaagatg atgatgataa caacgatgag 1920
gatctctaataagccattcc ttcattgggca gccagccacc gtctctaatt agtatcatat 1980
gtgatttggt ttcttttgtc aaccgcggca agacatatat gttgtatggt gtagcaacat 2040
tatgttgatt atagcttggt ggaaaaattc tctggttgca gttaatcaac ttcttttgat 2100
cagttgttgt tctgcgacac atatgaagct aatggtgttt cctatcctag ttaatccatg 2160
tccttggtga tcatcaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 2212

```

```

<210> 27
<211> 549
<212> PRT
<213> Hordeum vulgare

```

```

<400> 27

```

```

Met Ala Ala Ala Ala Thr Arg Arg Ala Ala Ser Ser Leu Val Ser Arg
1          5          10          15

```

```

Cys Leu Leu Ser Arg Pro Ala Ala Ser Pro Ala Ala Val Pro Ser Ala
20          25          30

```

```

Leu Arg Arg Ala Asp Gly Ala Arg Gly Leu Leu Pro Gly Leu Leu Gln
35          40          45

```

```

Arg Phe Gly Thr Ala Ala Ala Ala Glu Glu Pro Ile Ser Pro Ser Val
50          55          60

```

```

Gln Val Gly Glu Thr Gln Leu Leu Ile Asn Gly Lys Phe Val Asp Ala
65          70          75          80

```

```

Ala Ser Gly Lys Thr Phe Pro Thr Leu Asp Pro Arg Thr Gly Glu Val
85          90          95

```

```

Ile Ala Arg Val Ser Glu Gly Asp Ala Glu Asp Val Asp Arg Ala Val
100         105         110

```



Val Ala Ala Arg Lys Ala Phe Asp Glu Gly Pro Trp Pro Lys Met Thr  
 115 120 125

Ala Tyr Glu Arg Ser Arg Ile Leu Leu Arg Phe Ala Asp Leu Ile Glu  
 130 135 140

Lys His Asn Asp Glu Ile Ala Ala Leu Glu Thr Trp Asp Asn Gly Lys  
 145 150 155 160

Pro Tyr Glu Gln Ala Ala His Ile Glu Val Pro Met Leu Ala Arg Leu  
 165 170 175

Met Arg Tyr Tyr Ala Gly Trp Thr Asp Lys Ile His Gly Leu Ile Val  
 180 185 190

Pro Ala Asp Gly Pro His His Val Gln Val Leu His Glu Pro Ile Gly  
 195 200 205

Val Val Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Tyr Gly  
 210 215 220

Trp Lys Val Gly Pro Ala Leu Ala Cys Gly Asn Thr Ile Val Leu Lys  
 225 230 235 240

Thr Ala Glu Gln Thr Pro Leu Ser Ala Leu Tyr Val Ser Lys Leu Leu  
 245 250 255

His Glu Ala Gly Leu Pro Glu Gly Val Leu Asn Ile Ile Ser Gly Phe  
 260 265 270

Gly Pro Thr Ala Gly Ala Ala Leu Ala Gly His Met Asp Val Asp Lys  
 275 280 285

Ile Ala Phe Thr Gly Ser Thr Asp Thr Gly Lys Val Ile Leu Glu Leu  
 290 295 300

Ser Ala Arg Ser Asn Leu Lys Ala Val Thr Leu Glu Leu Gly Gly Lys  
 305 310 315 320

Ser Pro Phe Ile Val Met Asp Asp Ala Asp Ile Asp Gln Ala Val Glu  
 325 330 335

Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys Ala  
 340 345 350

Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp Glu Phe Val Glu  
355 360 365

Lys Ser Lys Ala Arg Ala Leu Lys Arg Val Val Gly Asp Pro Phe Arg  
370 375 380

Lys Gly Val Glu Gln Gly Pro Gln Ile Asp Asp Glu Gln Phe Lys Lys  
385 390 395 400

Ile Leu Arg Tyr Ile Lys Ser Gly Val Asp Ser Gly Ala Thr Leu Val  
405 410 415

Thr Gly Gly Asp Lys Leu Gly Asp Lys Gly Tyr Tyr Ile Gln Pro Thr  
420 425 430

Ile Phe Ser Asp Val Gln Asp Asp Met Lys Ile Ala Gln Glu Glu Ile  
435 440 445

Phe Gly Pro Val Gln Ser Ile Phe Lys Phe Asn Asp Leu Asn Glu Val  
450 455 460

Ile Lys Arg Ala Asn Ala Ser Gln Tyr Gly Leu Ala Ala Gly Val Phe  
465 470 475 480

Thr Asn Asn Leu Asp Thr Ala Asn Thr Leu Thr Arg Ala Leu Arg Ala  
485 490 495

Gly Thr Ile Trp Val Asn Cys Phe Asp Ile Phe Asp Ala Ala Ile Pro  
500 505 510

Phe Gly Gly Tyr Lys Met Ser Gly Ile Gly Arg Glu Lys Gly Ile Asp  
515 520 525

Ser Leu Lys Asn Tyr Leu Gln Val Lys Ala Val Val Thr Ala Leu Lys  
530 535 540

Asn Pro Ala Trp Leu  
545

<210> 28  
 <211> 1700  
 <212> DNA  
 <213> *Medicago truncatula*

<400> 28  
 cccattttctt tgaaatctac cattttctttc aagttgtctt gtgaattgac tctggtttct 60  
 ttgggaaaca cacaagatg actctacctt cttccaatgg caagactaat ctctctctag 120  
 agattcccac catcaagttc accaaactct tcatcaatgg agaatttggt gattcccttt 180  
 caggaaaaga gtttgagaca atagatccaa gaagtggaga ggtgatagca aaaattgcag 240  
 agggaaacgaa agaagacatt gatgttgctg taaaagcggc acgtgtcgct ttcgatgatg 300  
 gtccatggcc tcgtatgccc ggttttgtaa gagcaaaaat aatgctgaaa tgggcagact 360  
 taattgatca aaacatagaa gaaatagcag cattagatac aatagatgct ggaaaactat 420  
 acactttctg caaagctggt gacattcctg gagtagcaaa tataatacgt tacctatgcc 480  
 ggtgctgctg ataaaattca cggcaagggt ttaaaacctg ctcgaggagt gcacgcatat 540  
 actttgatgg agccaatcgg tgtcgttgga cacattatct cttggaattt tcttagtact 600  
 atgtttgctg ctaaggttgc tctgtctttg gctgctgggt gtactatggt tcttaagcct 660  
 gctgaacaaa cacctctctc tgccttggtt tatgctcatc ttgctaagga ggctggaatt 720  
 ccagatggag tgctcaatgt agtacctgga tttggtgcaa ctgcaggagc tgcaataagc 780  
 tcacacatgg acattgataa ggtagtctt accggttcaa cagaagtagg acgcgaaata 840  
 atggtatctg cagctagaag taatttgaaa ccagtttcac ttgaattagg aggaaaatca 900  
 cccctcttaa tttttgatga tgcgtatggt aataaagctg ctgaacttgc tctccttggc 960  
 attttattta ataagggaga aatttggtgt gcgggttctc gtgtggttgt tcaagaagga 1020  
 atctatgatg aatttgagaa gaagttggtg gagaaagcaa aagcttgggt tggttggtgat 1080  
 ccttttgatc ctaaagttca acaagggcct caggttgaca agaagcaatt tgaaaaaatt 1140  
 ctttctaca ttgagcatgg aaagaatgat ggcgcaaccc ttttgacagg tggtaaaaaa 1200  
 attggagaca agggttacta cattgagcct acaattttct caaatgttaa ggaggacatg 1260  
 cgtatagcac aagatgaaat atttggccct gtcatggcac tcatgaagtt caagactatt 1320  
 gaggaagcaa tcaaaagtgc aaacaatata aaatatggct tagcagcagg aattgtgaca 1380  
 aagaatttg atatagcaaa cactgtgtca aggtccatta gagcaggaat tatttggtatt 1440  
 aattgctact ttgcctttgg aaatgatatt ccttatggag gttacaagat gagtgggttt 1500  
 ggaagagatt ttggattgga atcattacat aaatatattgc aagttaaatc tgttgtaact 1560

cccatttaca attctccttg gctttgaatg ttctttgtat ttgggttatg tgtatttgag 1620  
 agtgaacaaa tggacctttt ccatgtataa ttcatacataa taataacatt ataagatctt 1680  
 atgttatgtt acatccaatc 1700

<210> 29  
 <211> 502  
 <212> PRT  
 <213> Medicago truncatula

<400> 29

Met Thr Leu Pro Ser Ser Asn Gly Lys Thr Asn Leu Ser Leu Glu Ile  
 1 5 10 15

Pro Thr Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Glu Phe Val Asp  
 20 25 30

Ser Leu Ser Gly Lys Glu Phe Glu Thr Ile Asp Pro Arg Ser Gly Glu  
 35 40 45

Val Ile Ala Lys Ile Ala Glu Gly Thr Lys Glu Asp Ile Asp Val Ala  
 50 55 60

Val Lys Ala Ala Arg Val Ala Phe Asp Asp Gly Pro Trp Pro Arg Met  
 65 70 75 80

Pro Gly Phe Val Arg Ala Lys Ile Met Leu Lys Trp Ala Asp Leu Ile  
 85 90 95

Asp Gln Asn Ile Glu Glu Ile Ala Ala Leu Asp Thr Ile Asp Ala Gly  
 100 105 110

Lys Leu Tyr Thr Phe Cys Lys Ala Val Asp Ile Pro Gly Val Ala Asn  
 115 120 125

Ile Ile Arg Tyr Leu Ala Gly Ala Ala Asp Lys Ile His Gly Lys Val  
 130 135 140

Leu Lys Pro Ala Arg Glu Leu His Ala Tyr Thr Leu Met Glu Pro Ile  
 145 150 155 160

Gly Val Val Gly His Ile Ile Pro Trp Asn Phe Pro Ser Thr Met Phe  
 165 170 175

Ala Ala Lys Val Ala Pro Ala Leu Ala Ala Gly Cys Thr Met Val Leu  
180 185 190

Lys Pro Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Tyr Ala His Leu  
195 200 205

Ala Lys Glu Ala Gly Ile Pro Asp Gly Val Leu Asn Val Val Pro Gly  
210 215 220

Phe Gly Ala Thr Ala Gly Ala Ala Ile Ser Ser His Met Asp Ile Asp  
225 230 235 240

Lys Val Ser Phe Thr Gly Ser Thr Glu Val Gly Arg Glu Ile Met Val  
245 250 255

Ser Ala Ala Arg Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly Gly  
260 265 270

Lys Ser Pro Leu Leu Ile Phe Asp Asp Ala Asp Val Asn Lys Ala Ala  
275 280 285

Glu Leu Ala Leu Leu Gly Ile Leu Phe Asn Lys Gly Glu Ile Cys Val  
290 295 300

Ala Gly Ser Arg Val Phe Val Gln Glu Gly Ile Tyr Asp Glu Phe Glu  
305 310 315 320

Lys Lys Leu Val Glu Lys Ala Lys Ala Trp Val Val Gly Asp Pro Phe  
325 330 335

Asp Pro Lys Val Gln Gln Gly Pro Gln Val Asp Lys Lys Gln Phe Glu  
340 345 350

Lys Ile Leu Ser Tyr Ile Glu His Gly Lys Asn Asp Gly Ala Thr Leu  
355 360 365

Leu Thr Gly Gly Lys Lys Ile Gly Asp Lys Gly Tyr Tyr Ile Glu Pro  
370 375 380

Thr Ile Phe Ser Asn Val Lys Glu Asp Met Arg Ile Ala Gln Asp Glu  
385 390 395 400

Ile Phe Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Ile Glu Glu  
405 410 415

Ala Ile Lys Ser Ala Asn Asn Thr Lys Tyr Gly Leu Ala Ala Gly Ile  
 420 425 430

Val Thr Lys Asn Leu Asp Ile Ala Asn Thr Val Ser Arg Ser Ile Arg  
 435 440 445

Ala Gly Ile Ile Trp Ile Asn Cys Tyr Phe Ala Phe Gly Asn Asp Ile  
 450 455 460

Pro Tyr Gly Gly Tyr Lys Met Ser Gly Phe Gly Arg Asp Phe Gly Leu  
 465 470 475 480

Glu Ser Leu His Lys Tyr Leu Gln Val Lys Ser Val Val Thr Pro Ile  
 485 490 495

Tyr Asn Ser Pro Trp Leu  
 500

<210> 30  
 <211> 1484  
 <212> DNA  
 <213> *Medicago truncatula*

<400> 30  
 atgactggcc cagttaatgg cgaacccacc atcaagttca ccaagttatt catcgatgga 60  
 gattttgtgg attcggttac aggcaagaca ttgaaacaa tagatccaag aacaggagaa 120  
 gttatagcaa ggatcagcga aggaaccaa gaagacattg atgttgctgt aaaggcagct 180  
 cgttatgcat ttgactttgg tccttgcccc cgctgctg gtgctgaaag agcaaaactt 240  
 atgatgaaat ttgcggacct aattgatgaa aacatagaag agctagcagc acttgatgcc 300  
 attgatgcag gaaagttgta ccatatgtgt aaggctcttg acattccctc agcagcaaat 360  
 acacttcggt actatgcagg tgcagctgat aaaattcatg gagaggtatt aaaagttgca 420  
 agagagttcc atgcttatac attgatggaa ccaattggtg ttgatggaca cattattcct 480  
 tggaactttc ccacttcctt gttctttgtc aagggtagcc cttgcttaac tgctgggtgc 540  
 accatggctg tcaaacctgc tgagcaaaac cctctatctg ctttggttta tgctcatcta 600  
 gctaaattgg ctggaatccc agatggagtg atcaatgtag taccgggatt tggagctact 660  
 gctggtgctg cagtgaagtc acacatggac attgatgcgg ttagctttac tggttcaaca 720  
 caaactgggc gtgagataat gcaagctgca gctaagagta acttgaaaca tgtttcactt 780  
 gaattaggag gcaagtcacc cctcataata ttgatgatg ctgatattga caaagctact 840

gaacttgctc tattagggcat cctattttaac aagggagaag tgtgtgttgc aagttcacgt 900  
 gtgtttgttc aagaagggat ctatgatgaa tttgagaaaa aattggtaga aaaggctaaa 960  
 acttggggtca ttggagaccc atttgatcct aaagttcagc aaggacctca agttgacaag 1020  
 aaacaatttg aaaaagttct ttcatatata gagcatggga agaaagaagg agctaccctt 1080  
 ttgactgggg gtaaaacagt gggaaacaaa ggatactata ttgaaccaac aattttctcc 1140  
 aatataaagg atgatatggg tatagcacag gatgaaatat ttggtcctgt gatggcactg 1200  
 aagaagttaa agactattga ggaagcaatt aagagtgcta ataatacaag atatggacta 1260  
 gcagcaggta ttgtgacaaa gaatttggat attgcaaaca cagtgtcaag atccattcgt 1320  
 gcaggcacta tttggataaa ctgttatttt gcttttggag atgatattcc ttttggagga 1380  
 tataaaatga gtggatttgg aagagattat ggattagaag cccttcacaa gtatctacaa 1440  
 gttaaactctg ttgttactcc catttataat tctccctggc tcta 1484

<210> 31  
 <211> 494  
 <212> PRT  
 <213> Medicago truncatula

<400> 31

Met Thr Gly Pro Val Asn Gly Glu Pro Thr Ile Lys Phe Thr Lys Leu  
 1 5 10 15

Phe Ile Asp Gly Asp Phe Val Asp Ser Val Thr Gly Lys Thr Phe Glu  
 20 25 30

Thr Ile Asp Pro Arg Thr Gly Glu Val Ile Ala Arg Ile Ser Glu Gly  
 35 40 45

Thr Lys Glu Asp Ile Asp Val Ala Val Lys Ala Ala Arg Tyr Ala Phe  
 50 55 60

Asp Phe Gly Pro Trp Pro Arg Leu Pro Gly Ala Glu Arg Ala Lys Leu  
 65 70 75 80

Met Met Lys Phe Ala Asp Leu Ile Asp Glu Asn Ile Glu Glu Leu Ala  
 85 90 95

Ala Leu Asp Ala Ile Asp Ala Gly Lys Leu Tyr His Met Cys Lys Ala  
 100 105 110

Leu Asp Ile Pro Ser Ala Ala Asn Thr Leu Arg Tyr Tyr Ala Gly Ala  
 115 120 125

Ala Asp Lys Ile His Gly Glu Val Leu Lys Val Ala Arg Glu Phe His  
 130 135 140

Ala Tyr Thr Leu Met Glu Pro Ile Gly Val Asp Gly His Ile Ile Pro  
 145 150 155 160

Trp Asn Phe Pro Thr Ser Leu Phe Phe Val Lys Gly Ser Pro Cys Leu  
 165 170 175

Thr Ala Gly Cys Thr Met Val Val Lys Pro Ala Glu Gln Thr Pro Leu  
 180 185 190

Ser Ala Leu Phe Tyr Ala His Leu Ala Lys Leu Ala Gly Ile Pro Asp  
 195 200 205

Gly Val Ile Asn Val Val Pro Gly Phe Gly Ala Thr Ala Gly Ala Ala  
 210 215 220

Val Ser Ser His Met Asp Ile Asp Ala Val Ser Phe Thr Gly Ser Thr  
 225 230 235 240

Gln Thr Gly Arg Glu Ile Met Gln Ala Ala Ala Lys Ser Asn Leu Lys  
 245 250 255

His Val Ser Leu Glu Leu Gly Gly Lys Ser Pro Leu Ile Ile Phe Asp  
 260 265 270

Asp Ala Asp Ile Asp Lys Ala Thr Glu Leu Ala Leu Leu Gly Ile Leu  
 275 280 285

Phe Asn Lys Gly Glu Val Cys Val Ala Ser Ser Arg Val Phe Val Gln  
 290 295 300

Glu Gly Ile Tyr Asp Glu Phe Glu Lys Lys Leu Val Glu Lys Ala Lys  
 305 310 315 320

Thr Trp Val Ile Gly Asp Pro Phe Asp Pro Lys Val Gln Gln Gly Pro  
 325 330 335

Gln Val Asp Lys Lys Gln Phe Glu Lys Val Leu Ser Tyr Ile Glu His  
 340 345 350



Gly Lys Lys Glu Gly Ala Thr Leu Leu Thr Gly Gly Lys Thr Val Gly  
 355 360 365

Asn Lys Gly Tyr Tyr Ile Glu Pro Thr Ile Phe Ser Asn Ile Lys Asp  
 370 375 380

Asp Met Val Ile Ala Gln Asp Glu Ile Phe Gly Pro Val Met Ala Leu  
 385 390 395 400

Lys Lys Phe Lys Thr Ile Glu Glu Ala Ile Lys Ser Ala Asn Asn Thr  
 405 410 415

Arg Tyr Gly Leu Ala Ala Gly Ile Val Thr Lys Asn Leu Asp Ile Ala  
 420 425 430

Asn Thr Val Ser Arg Ser Ile Arg Ala Gly Thr Ile Trp Ile Asn Cys  
 435 440 445

Tyr Phe Ala Phe Gly Asp Asp Ile Pro Phe Gly Gly Tyr Lys Met Ser  
 450 455 460

Gly Phe Gly Arg Asp Tyr Gly Leu Glu Ala Leu His Lys Tyr Leu Gln  
 465 470 475 480

Val Lys Ser Val Val Thr Pro Ile Tyr Asn Ser Pro Trp Leu  
 485 490

<210> 32  
 <211> 1511  
 <212> DNA  
 <213> Medicago truncatula

<400> 32  
 atgactgatac ttaactccag taatggggac aacagctcct tgttcaaaat gccgaccatc 60  
 aagtataaca agctcttcat caatggagat tttgtcgatt ctgtatcagg aagcacattt 120  
 gaaacaatag acccaagaac aggagatgtg attgcaagaa taagtgaagg agcaaaagaa 180  
 gacattgaaa ttgcagttaa agcagcacgt gaagcatttg attcaggtcc atggccccgg 240  
 atgtctggtg ttgaacgtgc gaaaataatg atgaaatttg cagaactaat tgatgaaaac 300  
 atagaagaac tagcaacatt agatgcaatt gatgctggca aggtgtactt tatcaacaag 360  
 gcttttgaaa ttccttcagc agcaaataca ctacgttact atgcaggtgc tgctgataaa 420  
 attcatggtg aggtattaaa atcttctggc caattccatg catacacact gatggaacca 480

attggtgttg tgggacacat cattccatgg aatgctccca ctatgggtttt cttcaccaaa 540  
 gttagccctt ccttagctgc tgggtgcacc atgggttctca aacctgctga acaaacacct 600  
 ctttctgctt tgttttatgc ccatctagct aagctggctg ggatcccaaa tggagtgtg 660  
 aatgtagtac ccggatttgg tccaactgct ggtgctgcaa tcagctcaca catggacata 720  
 gatgttgca gctttactgg ttcagttgaa gtaggccgtg aaataatgca agctgcagct 780  
 aagagtaatt taaaacatgt ttcacttgaa ttaggaggca agtcacctct cataattttc 840  
 gatgatgcaa acatagacaa agctgttgag ctagctcttt tgggtatcct agctaacaag 900  
 ggagaaaattt gcgttgcatg ttcccggtg tttgttcagg aagggatcta cgatcaagta 960  
 gagaagaagt tgggtggagaa ggcaaaagcc tgggtcattg gagatccttt tgatcctaaa 1020  
 actcaacaag gacctcaggc tgataggaac caattcgaaa aaatcatttc ctatattgag 1080  
 catggaaaga gagaaggagc tacactcttg actggaggta gaagagtggg cagtcagggc 1140  
 tactacattg aacctacaat tttctccaat gtaaaggagg acatgcttat agcacaggat 1200  
 gaaatatttg gccctgtgat ggcaactatg aagttcaaga ctattgagga agccattaag 1260  
 agtgccaaca ataccagata tggcctagca gcaggcattg tgaccaagaa cttggatatt 1320  
 gcaaacactg tttcaaggtc catccgtgca ggcattatth ggatcaactc ttatcttgcc 1380  
 gtgggaagtg acattccttt tggaggatat aaaatgagtg gatttggaag agatcagggg 1440  
 ttagaagctc ttcacaagta cttacaagtt aaatccattg taacacctat ttacaattct 1500  
 ccctggcttt g 1511

<210> 33  
 <211> 503  
 <212> PRT  
 <213> *Medicago truncatula*

<400> 33

Met Thr Asp Leu Asn Ser Ser Asn Gly Asp Asn Ser Ser Leu Phe Lys  
 1 5 10 15

Met Pro Thr Ile Lys Tyr Asn Lys Leu Phe Ile Asn Gly Asp Phe Val  
 20 25 30

Asp Ser Val Ser Gly Ser Thr Phe Glu Thr Ile Asp Pro Arg Thr Gly  
 35 40 45

Asp Val Ile Ala Arg Ile Ser Glu Gly Ala Lys Glu Asp Ile Glu Ile  
 50 55 60

Ala	Val	Lys	Ala	Ala	Arg	Glu	Ala	Phe	Asp	Ser	Gly	Pro	Trp	Pro	Arg	65	70	75	80
Met	Ser	Gly	Val	Glu	Arg	Ala	Lys	Ile	Met	Met	Lys	Phe	Ala	Glu	Leu	85	90	95	
Ile	Asp	Glu	Asn	Ile	Glu	Glu	Leu	Ala	Thr	Leu	Asp	Ala	Ile	Asp	Ala	100	105	110	
Gly	Lys	Val	Tyr	Phe	Ile	Asn	Lys	Ala	Phe	Glu	Ile	Pro	Ser	Ala	Ala	115	120	125	
Asn	Thr	Leu	Arg	Tyr	Tyr	Ala	Gly	Ala	Ala	Asp	Lys	Ile	His	Gly	Glu	130	135	140	
Val	Leu	Lys	Ser	Ser	Gly	Gln	Phe	His	Ala	Tyr	Thr	Leu	Met	Glu	Pro	145	150	155	160
Ile	Gly	Val	Val	Gly	His	Ile	Ile	Pro	Trp	Asn	Ala	Pro	Thr	Met	Val	165	170	175	
Phe	Phe	Thr	Lys	Val	Ser	Pro	Ser	Leu	Ala	Ala	Gly	Cys	Thr	Met	Val	180	185	190	
Leu	Lys	Pro	Ala	Glu	Gln	Thr	Pro	Leu	Ser	Ala	Leu	Phe	Tyr	Ala	His	195	200	205	
Leu	Ala	Lys	Leu	Ala	Gly	Ile	Pro	Asn	Gly	Val	Leu	Asn	Val	Val	Pro	210	215	220	
Gly	Phe	Gly	Pro	Thr	Ala	Gly	Ala	Ala	Ile	Ser	Ser	His	Met	Asp	Ile	225	230	235	240
Asp	Val	Val	Ser	Phe	Thr	Gly	Ser	Val	Glu	Val	Gly	Arg	Glu	Ile	Met	245	250	255	
Gln	Ala	Ala	Ala	Lys	Ser	Asn	Leu	Lys	His	Val	Ser	Leu	Glu	Leu	Gly	260	265	270	
Gly	Lys	Ser	Pro	Leu	Ile	Ile	Phe	Asp	Asp	Ala	Asn	Ile	Asp	Lys	Ala	275	280	285	

Val Glu Leu Ala Leu Leu Gly Ile Leu Ala Asn Lys Gly Glu Ile Cys  
 290 295 300

Val Ala Cys Ser Arg Val Phe Val Gln Glu Gly Ile Tyr Asp Gln Val  
 305 310 315 320

Glu Lys Lys Leu Val Glu Lys Ala Lys Ala Trp Val Ile Gly Asp Pro  
 325 330 335

Phe Asp Pro Lys Thr Gln Gln Gly Pro Gln Ala Asp Arg Asn Gln Phe  
 340 345 350

Glu Lys Ile Ile Ser Tyr Ile Glu His Gly Lys Arg Glu Gly Ala Thr  
 355 360 365

Leu Leu Thr Gly Gly Arg Arg Val Gly Ser Gln Gly Tyr Tyr Ile Glu  
 370 375 380

Pro Thr Ile Phe Ser Asn Val Lys Glu Asp Met Leu Ile Ala Gln Asp  
 385 390 395 400

Glu Ile Phe Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Ile Glu  
 405 410 415

Glu Ala Ile Lys Ser Ala Asn Asn Thr Arg Tyr Gly Leu Ala Ala Gly  
 420 425 430

Ile Val Thr Lys Asn Leu Asp Ile Ala Asn Thr Val Ser Arg Ser Ile  
 435 440 445

Arg Ala Gly Ile Ile Trp Ile Asn Ser Tyr Leu Ala Val Gly Ser Asp  
 450 455 460

Ile Pro Phe Gly Gly Tyr Lys Met Ser Gly Phe Gly Arg Asp Gln Gly  
 465 470 475 480

Leu Glu Ala Leu His Lys Tyr Leu Gln Val Lys Ser Ile Val Thr Pro  
 485 490 495

Ile Tyr Asn Ser Pro Trp Leu  
 500

<210> 34  
 <211> 1720  
 <212> DNA  
 <213> Glycine max

<400> 34  
 ggcacgagggc gccagcgtct ctacgacaat ctccctttctc tctaactcat aactcagatg 60  
 agtgcctctct ctctaactcc agtagtagcc acggcaattc ctccctcaag atgcccccca 120  
 tcaagttttac caagctcttc atcaatggag atttcgttga ttccatatca ggaaggacat 180  
 ttgagactat agaccccaga aaagaagagg taattgcaag agttagttag ggagataaag 240  
 aagacattga tattgctgtt aaagcagcac gtcaggcatt tgactcgggt ccatggcctc 300  
 gcttgccagg ctctgaaagg gcaaaaatta tgatgaaatg ggcagacctt gttgatgaaa 360  
 atatagaaga actagcagca ttagatacca ttgatgctgg aaagctatac tatattaata 420  
 aggtagcggg aattccttca gctacaaatg cgttacggta ctatgcaggt gctgctgata 480  
 aaattcacgg tgacgtatta aaaatgaacg gggatttcca tgcatataca ctttttgaac 540  
 caattggtgt tgtgggacac ataattccat ggaatgcccc cagcctctca tttttcatca 600  
 aggttagccc ttccttagct gcaggctgta ctatggctct caaacctgct gaacaaacac 660  
 ccctctctgc gtggtgttat gctcatataa ctaagggtggc tggaatccca gatggtgtgc 720  
 ttaatatagt acctggattt ggcccaactg ctggcgcagc aataagctca cacatggaca 780  
 tagatgcggg cagttttact ggttcaattg aagtagggcg tgaagtgatg caggctgcag 840  
 ctaggagcaa tttaaaacca gtttcacttg aattaggagg caagtctcct ctcatatttt 900  
 tcaatgacgc ggatatagac aaagctgccc agcttgctct ctttggcctc atgtctaaca 960  
 agggagaaaat ttgtgtggca agttctcggg tgtttgtcca ggaagagatc tatgatgaat 1020  
 ttgagaagaa gttggtggag aaggcaaaat cttgggtcgt tggggatcct tttgatccca 1080  
 aatccctgca agggcctcag gctgacagga accaattgga gaaaatactc tcctatattg 1140  
 aacacggaaa gagagaagga gctacccttt tgaccggagg taatacagtg ggcaacaaag 1200  
 gttactacat agaacctaca attttctgta atgtaaagga ggacatgctt atagcacgag 1260  
 atgaaatatt tggccctgta ctagcgtgta tgaaatttaa gaccatggag gaagcaatta 1320  
 aaagtgctaa caacaccaag tatggcctag cagcaggaat tgtgaccaag aatttgata 1380  
 ctgcaaacac tatgtcaagg tccattcgtg caggcattgt ttggatcaac tgctatttaa 1440  
 ccgtagggag tgacgttctt tttggagggt ataagatgag tggatttgga agagatttgg 1500  
 gattgcaggc ccttcataag tacttacaag ttaaactctgt tgtaacacct attcacaatt 1560

ctccttggtt ttgaataatt gaatgtctcc tacatgagca catatgcgtg tcttctctca 1620  
 ttgaaataa attacacttt atttccttat gatgtatgac ttaaaaatac ttagtctctt 1680  
 gtattatgag ttctttgttt tattacaacg ttgttaactt 1720

<210> 35  
 <211> 487  
 <212> PRT  
 <213> Glycine max

<400> 35

Met Pro Pro Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Asp Phe Val  
 1 5 10 15

Asp Ser Ile Ser Gly Arg Thr Phe Glu Thr Ile Asp Pro Arg Lys Glu  
 20 25 30

Glu Val Ile Ala Arg Val Ser Glu Gly Asp Lys Glu Asp Ile Asp Ile  
 35 40 45

Ala Val Lys Ala Ala Arg Gln Ala Phe Asp Ser Gly Pro Trp Pro Arg  
 50 55 60

Leu Pro Gly Ser Glu Arg Ala Lys Ile Met Met Lys Trp Ala Asp Leu  
 65 70 75 80

Val Asp Glu Asn Ile Glu Glu Leu Ala Ala Leu Asp Thr Ile Asp Ala  
 85 90 95

Gly Lys Leu Tyr Tyr Ile Asn Lys Val Ala Glu Ile Pro Ser Ala Thr  
 100 105 110

Asn Ala Leu Arg Tyr Tyr Ala Gly Ala Ala Asp Lys Ile His Gly Asp  
 115 120 125

Val Leu Lys Met Asn Gly Asp Phe His Ala Tyr Thr Leu Leu Glu Pro  
 130 135 140

Ile Gly Val Val Gly His Ile Ile Pro Trp Asn Ala Pro Ser Leu Ser  
 145 150 155 160

Phe Phe Ile Lys Val Ser Pro Ser Leu Ala Ala Gly Cys Thr Met Val  
 165 170 175

Leu Lys Pro Ala Glu Gln Thr Pro Leu Ser Ala Trp Cys Tyr Ala His  
 180 185 190

Ile Thr Lys Val Ala Gly Ile Pro Asp Gly Val Leu Asn Ile Val Pro  
 195 200 205

Gly Phe Gly Pro Thr Ala Gly Ala Ala Ile Ser Ser His Met Asp Ile  
 210 215 220

Asp Ala Val Ser Phe Thr Gly Ser Ile Glu Val Gly Arg Glu Val Met  
 225 230 235 240

Gln Ala Ala Ala Arg Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly  
 245 250 255

Gly Lys Ser Pro Leu Ile Ile Phe Asn Asp Ala Asp Ile Asp Lys Ala  
 260 265 270

Ala Gln Leu Ala Leu Phe Gly Ile Met Ser Asn Lys Gly Glu Ile Cys  
 275 280 285

Val Ala Ser Ser Arg Val Phe Val Gln Glu Glu Ile Tyr Asp Glu Phe  
 290 295 300

Glu Lys Lys Leu Val Glu Lys Ala Lys Ser Trp Val Val Gly Asp Pro  
 305 310 315 320

Phe Asp Pro Lys Ser Leu Gln Gly Pro Gln Ala Asp Arg Asn Gln Leu  
 325 330 335

Glu Lys Ile Leu Ser Tyr Ile Glu His Gly Lys Arg Glu Gly Ala Thr  
 340 345 350

Leu Leu Thr Gly Gly Asn Thr Val Gly Asn Lys Gly Tyr Tyr Ile Glu  
 355 360 365

Pro Thr Ile Phe Cys Asn Val Lys Glu Asp Met Leu Ile Ala Arg Asp  
 370 375 380

Glu Ile Phe Gly Pro Val Leu Ala Leu Met Lys Phe Lys Thr Met Glu  
 385 390 395 400

Glu Ala Ile Lys Ser Ala Asn Asn Thr Lys Tyr Gly Leu Ala Ala Gly  
 405 410 415

Ile Val Thr Lys Asn Leu Asp Thr Ala Asn Thr Met Ser Arg Ser Ile  
420 425 430

Arg Ala Gly Ile Val Trp Ile Asn Cys Tyr Leu Thr Val Gly Ser Asp  
435 440 445

Val Pro Phe Gly Gly Tyr Lys Met Ser Gly Phe Gly Arg Asp Leu Gly  
450 455 460

Leu Gln Ala Leu His Lys Tyr Leu Gln Val Lys Ser Val Val Thr Pro  
465 470 475 480

Ile His Asn Ser Pro Trp Leu  
485

<210> 36  
<211> 1641  
<212> DNA  
<213> Triticum aestivum

<220>  
<221> misc\_feature  
<222> (1546)..(1546)  
<223> n is a, c, g, or t

<220>  
<221> misc\_feature  
<222> (1584)..(1585)  
<223> n is a, c, g, or t

<220>  
<221> misc\_feature  
<222> (1597)..(1597)  
<223> n is a, c, g, or t

<400> 36  
tcggcacgag gctcactcat tctctccacc gaggccaagg gaagggacga gctgaacggg 60  
gcgatggcga tggcggcagc gaacggcgcc aaggggtttg aggtgccgga actggacatc 120  
aagttcacca agctcttcat caatggccag ttcgtcgacg cggcttccgg caagacgttc 180  
gagaccggg acccacgcac cggcgaggtg atcgccaaga tcgccgaggg agacaaggcc 240  
gacatcgacc tcgccgtgaa ggccgcccgc gaggccttcg acaacggccc atggcccaga 300  
atgcccggct gtgcaagggc ccgatcatg cacaggttcg cggacctggt ggaccagcac 360  
gtcgaggagc tggcggcgct ggacacggtg gacgccggca agctattcct gatgggtaag 420  
atgatggaca tccccggagg cgccaacctg ctccgctact acgccggcgc cgccgacaag 480



atccacggcg agacgctcaa gatggcgcgc ccgctccacg gctacacgct caaggagccc	540
gtcggcgctcg tgggccacat cgtgccatgg aactacccca ccaccatggt cttcttcaag	600
gtcagccccg cgtcgcgcgc cggctgcacc atggctgtca agcccgccga gcagacgccc	660
ctctccgcgc tcttctacgc ccacctcgcc aaggaggccg gcatccccga cggcgttctc	720
aacgtcgtgc ccggatttgg acccacggcc ggtgcgcga tcgcctctca catggacgtc	780
gacaagatca gcttcacggg atccacggag gtcgggcggc tggatcatgca ggctgcggcc	840
acgagcaacc taaagcccgt ctactggag ctggggggca agtccccgt catcgtgttt	900
gacgacgccg acgttgacat ggccgtcaac ctcgtaaca tggccaccta catgaacaag	960
ggcgagatct gcgtgcgcgc cacacgcata tacgtgcagg aagggatcta cgacgccttt	1020
gtgaagaaat cggctcagct tgccaagaaa tcgggtggctg gagatccttt caacccaaac	1080
gtacatcaag gccctcaggt tgacaaggat caatacgaaa aggtgctcaa gtacatcgac	1140
gtcggtaaga gcgaaggcgc caccctctc accggaggga agccctgcag cgacaagggt	1200
tactacatcg agcccaccat cttcacgcac gtcaccgatg acatgtcgat tgcgcaagag	1260
gaaatcttcg gcccagtcac ggctctcatg aaattcaaga cgggtggacga ggtgattcag	1320
aaggccaaca gcacccggta tggcctggcc gccggcgtgg tgaccaagaa catcgacacc	1380
atgaacaccg tgcgcgggtc cgtcagggtc ggggtcgtct ggggttaactg ctacttcgcc	1440
ttccgacccc cgacccccgt tcggcggtcg caagatgaag cggcttttcg caaggacatg	1500
ggcacggatc tctccgagaa attacctgca caccaaagac ggtggncact cccgctctac	1560
aacacccctg ggctgttgat gttnnacgga catcccnacc acaaacaagc acaggcgaaa	1620
acaaatgggg ggagaaagat t	1641

<210> 37  
 <211> 504  
 <212> PRT  
 <213> Triticum aestivum

<220>  
 <221> misc\_feature  
 <222> (495)..(495)  
 <223> Xaa can be any naturally occurring amino acid

<400> 37

Met Ala Met Ala Ala Ala Asn Gly Ala Lys Gly Phe Glu Val Pro Glu  
1 5 10 15

Leu Asp Ile Lys Phe Thr Lys Leu Phe Ile Asn Gly Gln Phe Val Asp  
20 25 30

Ala Ala Ser Gly Lys Thr Phe Glu Thr Arg Asp Pro Arg Thr Gly Glu  
35 40 45

Val Ile Ala Lys Ile Ala Glu Gly Asp Lys Ala Asp Ile Asp Leu Ala  
50 55 60

Val Lys Ala Ala Arg Glu Ala Phe Asp Asn Gly Pro Trp Pro Arg Met  
65 70 75 80

Pro Gly Cys Ala Arg Ala Arg Ile Met His Arg Phe Ala Asp Leu Val  
85 90 95

Asp Gln His Val Glu Glu Leu Ala Ala Leu Asp Thr Val Asp Ala Gly  
100 105 110

Lys Leu Phe Leu Met Gly Lys Met Met Asp Ile Pro Gly Gly Ala Asn  
115 120 125

Leu Leu Arg Tyr Tyr Ala Gly Ala Ala Asp Lys Ile His Gly Glu Thr  
130 135 140

Leu Lys Met Ala Arg Pro Leu His Gly Tyr Thr Leu Lys Glu Pro Val  
145 150 155 160

Gly Val Val Gly His Ile Val Pro Trp Asn Tyr Pro Thr Thr Met Phe  
165 170 175

Phe Phe Lys Val Ser Pro Ala Leu Ala Ala Gly Cys Thr Met Val Val  
180 185 190

Lys Pro Ala Glu Gln Thr Pro Leu Ser Ala Leu Phe Tyr Ala His Leu  
195 200 205

Ala Lys Glu Ala Gly Ile Pro Asp Gly Val Leu Asn Val Val Pro Gly  
210 215 220

Phe Gly Pro Thr Ala Gly Ala Ala Ile Ala Ser His Met Asp Val Asp  
225 230 235 240  
Lys Ile Ser Phe Thr Gly Ser Thr Glu Val Gly Arg Leu Val Met Gln  
245 250 255  
Ala Ala Ala Thr Ser Asn Leu Lys Pro Val Ser Leu Glu Leu Gly Gly  
260 265 270  
Lys Ser Pro Val Ile Val Phe Asp Asp Ala Asp Val Asp Met Ala Val  
275 280 285  
Asn Leu Val Asn Met Ala Thr Tyr Met Asn Lys Gly Glu Ile Cys Val  
290 295 300  
Ala Gly Thr Arg Ile Tyr Val Gln Glu Gly Ile Tyr Asp Ala Phe Val  
305 310 315 320  
Lys Lys Ser Val Glu Leu Ala Lys Lys Ser Val Val Gly Asp Pro Phe  
325 330 335  
Asn Pro Asn Val His Gln Gly Pro Gln Val Asp Lys Asp Gln Tyr Glu  
340 345 350  
Lys Val Leu Lys Tyr Ile Asp Val Gly Lys Ser Glu Gly Ala Thr Leu  
355 360 365  
Leu Thr Gly Gly Lys Pro Cys Ser Asp Lys Gly Tyr Tyr Ile Glu Pro  
370 375 380  
Thr Ile Phe Thr Asp Val Thr Asp Asp Met Ser Ile Ala Gln Glu Glu  
385 390 395 400  
Ile Phe Gly Pro Val Met Ala Leu Met Lys Phe Lys Thr Val Asp Glu  
405 410 415  
Val Ile Gln Lys Ala Asn Ser Thr Arg Tyr Gly Leu Ala Ala Gly Val  
420 425 430  
Val Thr Lys Asn Ile Asp Thr Met Asn Thr Val Ser Arg Ser Val Arg  
435 440 445  
Ser Gly Val Val Trp Val Asn Cys Tyr Phe Ala Phe Arg Pro Pro Thr  
450 455 460

Pro Val Arg Arg Leu Gln Asp Glu Ala Ala Phe Gly Lys Asp Met Gly  
 465 470 475 480

Thr Asp Leu Ser Glu Lys Leu Pro Ala His Gln Arg Arg Trp Xaa Leu  
 485 490 495

Pro Leu Tyr Asn Thr Pro Gly Leu  
 500

<210> 38  
 <211> 2197  
 <212> DNA  
 <213> Triticum aestivum

<400> 38  
 taccacgcg tccgcatcac tgetccccct ctctcctcag tccccactct cttccccacgc 60  
 agctggggac gccctcccat ttactgagcc aagaggagga ggggaagaag aattgattgc 120  
 cgatccggcg cagaccaata aattgttccc gcctccgccg cgagatcatc atggctgctg 180  
 ccgccacgag gagggccgcc tctctgctcg cctcccgtcg cctgctcgcc aggcccgag 240  
 cgctgccccg cgctgtcccc tccgcgctcc gcagggcaga tgggtgcacgt ggattgttgc 300  
 caggactcct tcagaggttc ggcactgcgg cagcagcaga ggagcccatt tcgccttctg 360  
 tccaagtggg cgagacacag ctccctatca acggcaaatt cgttgatgct gcatctggta 420  
 aaactttccc gactgtggac cctcgcaccg gggaggtgat tgcccgcgtg gccgaaggag 480  
 atgccgaaga tgttgaccgt gcggttgctg ctgcccgaag ggcattcgat gaagggccat 540  
 ggcccaggat gactgcctat gagagatccc gtattcttct gcggtttgct gatttgatag 600  
 agaaacacaa tgatgatatc gctgcactgg agacgtggga caacgggaag ccctatgagc 660  
 aagctgcca catcgaagtg ccaatgcttg ttccgcttat gcggtactat gcaggctgga 720  
 ctgacaagat ccatgggtctc atcgtaaccg ctgatggccc gcaccatgta cagggtgctgc 780  
 acgagccgat tgggtgctg ggtcagatca tcccgtggaa cttccccactt ttgatgtatg 840  
 gctggaaagt tggccctgct ttggcctgtg gtaacactat tgttctcaag actgctgaac 900  
 aaactcctct atctgccctc tatgtttcta agctgttgca tgaggctgga ctaccggaag 960  
 gtgtcctgaa tatcgatatc ggtttcggtc ctactgctgg ggctgctctt gctagccaca 1020  
 tggatgttga caagattgca ttactggat caaccgatac tgggaaagtt attcttgagt 1080  
 tatctgcacg gagcaatctt aagccagtga cactggagct aggaggcaag tctcctttta 1140  
 tcgtcatgga tgatgcagat atcgaccaag ccgttgagct tgcgcatttt gcgctgtttt 1200

ttaaccaggg acaatgctgc tgcgctgggt ctgcacggt cgtacatgag cgtgtttatg 1260  
 atgagtttgt tgagaagtcc aaggctcgcg ctttgaagcg tgtagttggt gatccattca 1320  
 ggaaggggtgt tgagcaggggt cctcagattg atgatgagca attcaagaag atcttgcgct 1380  
 acatcaagtc ggggtgtggac agtggagcca cccttgtgac ggggtggtgac aagttgggtg 1440  
 acaaagggtta ctacatccag ccaacaattt tctcagatgt gcaggatggc atgaaaattg 1500  
 cccaagagga gatatttggg cctgttcagt caatcttcaa gttcaatgac ctcaacgagg 1560  
 tgatcaagag ggcgaacgca agccagtacg gattggctgc cgggtgtttc accaacaacc 1620  
 tggacacggc caacaccttg acgctgccc tcagggccgg cacggctctgg gtgaattgct 1680  
 ttgacatctt cgacgcggcg atccccctcg gcgggtacaa gatgagcggc atcggtaggg 1740  
 agaagggcat cgacagcctg aagaactacc tgcaagtcaa ggcggtcgtc accgcgctta 1800  
 agaaccccg cgtggttgtga gcatagcgca ctatggctct cttgacactc cggagaacgt 1860  
 gaagactcgc gataattgaa tgaggagagg aagaagaaga tgatgatgat gatgacacca 1920  
 acgaggatca ctaataagcc cctgccttca tgggcagcca gccaccgtct ctaataaata 1980  
 tcatatgtga tttggtttcc tttgtcaacc gcggcaagac atatatgttg tagcaacatt 2040  
 atgtttatta tcgcttggtg gagaagtctc tggttgcagt aaatctgttt ttttttatca 2100  
 gttgttgaag ctaatggtgt tcactaccct agttaattca tgcccttggt aagcagagaa 2160  
 taaagttctt ggtttggctg aagctgctaa cttcatt 2197

<210> 39  
 <211> 549  
 <212> PRT  
 <213> *Triticum aestivum*

<400> 39

Met Ala Ala Ala Ala Thr Arg Arg Ala Ala Ser Ser Leu Ala Ser Arg  
 1 5 10 15

Cys Leu Leu Ala Arg Pro Ala Ala Ser Pro Ala Ala Val Pro Ser Ala  
 20 25 30

Leu Arg Arg Ala Asp Gly Ala Arg Gly Leu Leu Pro Gly Leu Leu Gln  
 35 40 45

Arg Phe Gly Thr Ala Ala Ala Ala Glu Glu Pro Ile Ser Pro Ser Val  
 50 55 60

Gln	Val	Gly	Glu	Thr	Gln	Leu	Leu	Ile	Asn	Gly	Lys	Phe	Val	Asp	Ala	65	70	75	80
Ala	Ser	Gly	Lys	Thr	Phe	Pro	Thr	Val	Asp	Pro	Arg	Thr	Gly	Glu	Val	85	90		95
Ile	Ala	Arg	Val	Ala	Glu	Gly	Asp	Ala	Glu	Asp	Val	Asp	Arg	Ala	Val	100	105		110
Val	Ala	Ala	Arg	Lys	Ala	Phe	Asp	Glu	Gly	Pro	Trp	Pro	Arg	Met	Thr	115	120		125
Ala	Tyr	Glu	Arg	Ser	Arg	Ile	Leu	Leu	Arg	Phe	Ala	Asp	Leu	Ile	Glu	130	135		140
Lys	His	Asn	Asp	Asp	Ile	Ala	Ala	Leu	Glu	Thr	Trp	Asp	Asn	Gly	Lys	145	150	155	160
Pro	Tyr	Glu	Gln	Ala	Ala	His	Ile	Glu	Val	Pro	Met	Leu	Val	Arg	Leu	165	170		175
Met	Arg	Tyr	Tyr	Ala	Gly	Trp	Thr	Asp	Lys	Ile	His	Gly	Leu	Ile	Val	180	185		190
Pro	Ala	Asp	Gly	Pro	His	His	Val	Gln	Val	Leu	His	Glu	Pro	Ile	Gly	195	200		205
Val	Val	Gly	Gln	Ile	Ile	Pro	Trp	Asn	Phe	Pro	Leu	Leu	Met	Tyr	Gly	210	215		220
Trp	Lys	Val	Gly	Pro	Ala	Leu	Ala	Cys	Gly	Asn	Thr	Ile	Val	Leu	Lys	225	230	235	240
Thr	Ala	Glu	Gln	Thr	Pro	Leu	Ser	Ala	Leu	Tyr	Val	Ser	Lys	Leu	Leu	245	250		255
His	Glu	Ala	Gly	Leu	Pro	Glu	Gly	Val	Leu	Asn	Ile	Val	Ser	Gly	Phe	260	265		270
Gly	Pro	Thr	Ala	Gly	Ala	Ala	Leu	Ala	Ser	His	Met	Asp	Val	Asp	Lys	275	280		285
Ile	Ala	Phe	Thr	Gly	Ser	Thr	Asp	Thr	Gly	Lys	Val	Ile	Leu	Glu	Leu	290	295	300	

Ser Ala Arg Ser Asn Leu Lys Pro Val Thr Leu Glu Leu Gly Gly Lys  
 305 310 315 320

Ser Pro Phe Ile Val Met Asp Asp Ala Asp Ile Asp Gln Ala Val Glu  
 325 330 335

Leu Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys Ala  
 340 345 350

Gly Ser Arg Thr Phe Val His Glu Arg Val Tyr Asp Glu Phe Val Glu  
 355 360 365

Lys Ser Lys Ala Arg Ala Leu Lys Arg Val Val Gly Asp Pro Phe Arg  
 370 375 380

Lys Gly Val Glu Gln Gly Pro Gln Ile Asp Asp Glu Gln Phe Lys Lys  
 385 390 395 400

Ile Leu Arg Tyr Ile Lys Ser Gly Val Asp Ser Gly Ala Thr Leu Val  
 405 410 415

Thr Gly Gly Asp Lys Leu Gly Asp Lys Gly Tyr Tyr Ile Gln Pro Thr  
 420 425 430

Ile Phe Ser Asp Val Gln Asp Gly Met Lys Ile Ala Gln Glu Glu Ile  
 435 440 445

Phe Gly Pro Val Gln Ser Ile Phe Lys Phe Asn Asp Leu Asn Glu Val  
 450 455 460

Ile Lys Arg Ala Asn Ala Ser Gln Tyr Gly Leu Ala Ala Gly Val Phe  
 465 470 475 480

Thr Asn Asn Leu Asp Thr Ala Asn Thr Leu Thr Arg Ala Leu Arg Ala  
 485 490 495

Gly Thr Val Trp Val Asn Cys Phe Asp Ile Phe Asp Ala Ala Ile Pro  
 500 505 510

Phe Gly Gly Tyr Lys Met Ser Gly Ile Gly Arg Glu Lys Gly Ile Asp  
515 520 525

Ser Leu Lys Asn Tyr Leu Gln Val Lys Ala Val Val Thr Ala Leu Lys  
530 535 540

Asn Pro Ala Trp Leu  
545

<210> 40  
<211> 16  
<212> DNA  
<213> Arabidopsis thaliana

<400> 40  
atgagaacgg caaatg 16

<210> 41  
<211> 21  
<212> DNA  
<213> Arabidopsis thaliana

<400> 41  
ttacatccaa ggggaattgt g 21

<210> 42  
<211> 21  
<212> DNA  
<213> Arabidopsis thaliana

<400> 42  
ccacttctca tattcaacga c 21

<210> 43  
<211> 21  
<212> DNA  
<213> Arabidopsis thaliana

<400> 43  
gtcgttgaat atgagaagt g 21

<210> 44  
<211> 20  
<212> DNA  
<213> Arabidopsis thaliana

<400> 44  
aatccactgc ctttgctgac 20



<210> 45  
<211> 20  
<212> DNA  
<213> Arabidopsis thaliana

<400> 45  
aatccactgc ctttgetgac

20

<210> 46  
<211> 17  
<212> DNA  
<213> Arabidopsis thaliana

<400> 46  
aattggagtg gttggta

17

<210> 47  
<211> 20  
<212> DNA  
<213> Arabidopsis thaliana

<400> 47  
agccgcctta ttatcattgg

20